PARTS LIST &
CIRCUIT DIAGRAMS

FISHER

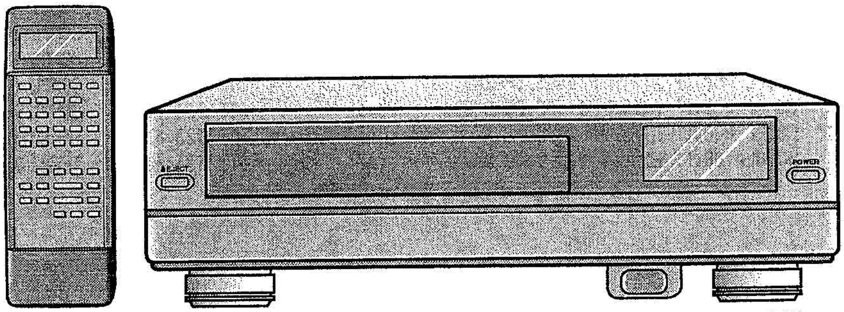
FVH-P1400S, DK
FVH-P1440S
Video Cassette Recorder

VHS PAL HQ

ASO

Please see other materials with Reference No. given in table below.

Materials	Model No.	Reference No.
Service Manual	FVH-P1400 Series FVH-P1440 Series	WM-530868
Mechanism Manual	P90 Mechanism	WM-530598
	P91 Mechanism	WM-530830



(FVH-P1400S, DK)

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Circuit Diagram

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the Parts List Do not deviate from the resistance, wattage and voltage ratings shown.

NOTE: 1. Parts order must contain Model Number, Part Number and Description.
2. N.S.P.: Not available as service parts.

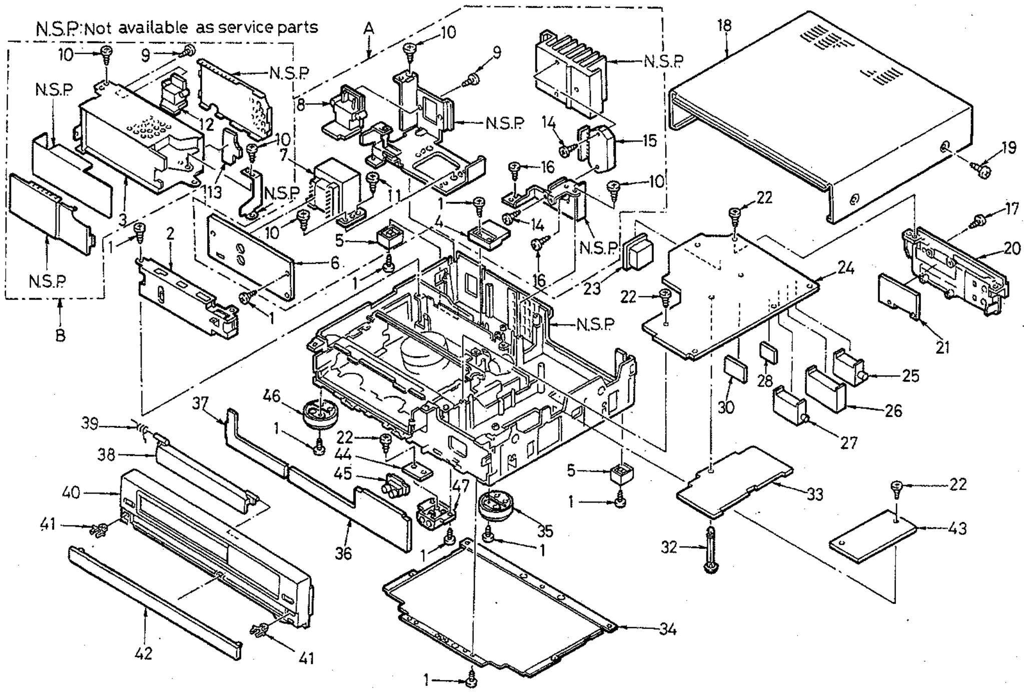
SP4/EXF, SPF, EEF	143 131 71, 134 43, 131 72
SP4V/EXF, SPF	143 131 56, 134 44

REFERENCE No. WM-530894

CABINET & CHASSIS PARTS

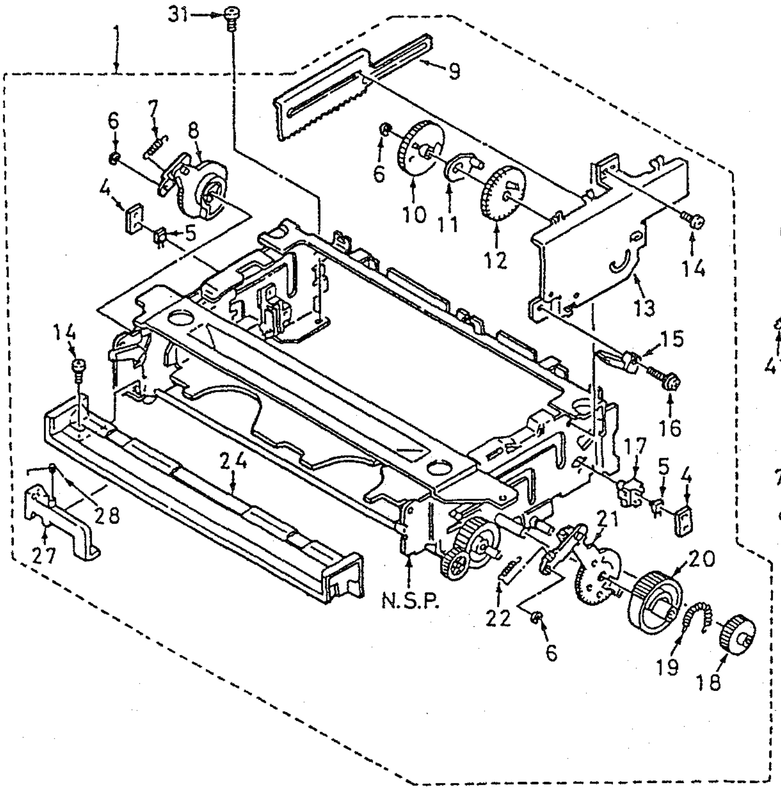
LOCATION	PARTS NO.	DESCRIPTION
1	411 137 0007	SCR L-TPG BIN 3X10
2	613 121 6495	COMPL PCB,VP-1
3	613 124 5709	COMPL PCB,PW-1(FVH-P1440S)
4	613 128 1578	HOLDER(FVH-P1400S,DK)
5	613 122 8276	STAND,REAR
6	613 125 3254	COMPL PCB,PW-1(FVH-P1400S)
OR	613 123 0538	COMPL PCB,PW-1(FVH-P1400DK)
7	613 120 8391	TRANS,POWER,T5001(FVH-P1400S,DK)
8	613 120 6199	COMPL PCB,PW-3(FVH-P1400S,DK)
9	411 021 6603	SCR S-TPG BIN 3X8
10	411 021 7907	SCR S-TPG BIN 4X12
11	411 021 9604	SCR S-TPG BIN 4X8
12	613 122 0829	COMPL PCB,PW-3(FVH-P1440S)
13	613 122 0812	COMPL PCB,PW-2(FVH-P1440S)
14	411 021 4500	SCR S-TPG BIN 3X16
15	613 120 6182	COMPL PCB,PW-2(FVH-P1400S,DK)
16	411 021 6405	SCR S-TPG BIN 3X8
18	613 124 8939	COVER,TOP
19	412 028 9406	SPECIAL SCREW
20	613 121 3814	TERMINAL(EXCEPT FVH-P1400DK)
OR	613 123 0651	TERMINAL(FVH-P1400DK)
21	613 125 3919	COMPL PCB,TB-1(FVH-P1400S)
OR	613 125 3933	COMPL PCB,TB-1(FVH-P1440S)
OR	613 125 3964	COMPL PCB,TB-1(FVH-P1400DK)
22	411 021 3800	SCR S-TPG BIN 3X10
23	613 120 7660	COMPL PCB,TM-5(FVH-P1400S,DK)
24	613 127 5942	COMPL PCB,CP-A(FVH-P1400S)
OR	613 128 5590	COMPL PCB,CP-A(FVH-P1400S,SPAIN)
OR	613 128 5620	COMPL PCB,CP-A(FVH-P1440S,SPAIN)
OR	613 124 7697	COMPL PCB,CP-A(FVH-P1440S,EUROPE)
OR	613 125 4640	COMPL PCB,CP-A(FVH-P1400DK)
25	613 080 5836	MODULATOR,RF(EXCEPT FVH-P1400DK)
25	613 120 5659	MODULATOR,RF(EXCEPT FVH-P1400DK)
OR	613 113 9039	MODULATOR,RF(FVH-P1400DK)
OR	613 123 0750	MODULATOR,RF(FVH-P1400DK)
26	613 108 3585	IF PACK(EXCEPT FVH-P1400DK)
OR	613 092 7811	IF PACK(FVH-P1400DK)
27	613 107 9410	TUNER PACK(EXCEPT FVH-P1400DK)
OR	613 092 6449	TUNER PACK(FVH-P1400DK)
28	613 127 8035	COMPL PCB,TN-7(EXCEPT FVH-P1400DK)
OR	613 127 8028	COMPL PCB,TN-7(FVH-P1400DK)
30	613 120 6076	COMPL PCB,VD-1
32	613 126 5103	HOLDER(INCLUDED IN CP-2)
33	613 121 7164	COMPL PCB,CP-2
34	613 123 6615	COVER,BOTTOM
35	613 122 8269	STAND,FRONT R
36	613 125 3186	COMPL PCB,TM-1(FVH-P1400S)
OR	613 124 7833	COMPL PCB,TM-1(FVH-P1440S)
OR	613 125 3193	COMPL PCB,TM-1(FVH-P1400DK)
37	613 123 2358	COMPL PCB,TM-2
38	613 125 4909	DOOR,CASSETTE(FVH-P1400S,DK)
OR	613 124 6164	DOOR,CASSETTE(FVH-P1440S)
39	613 110 2927	SPRING,DOOR CASSETTE
40	613 124 5990	ASSY,CABINET,FRONT
41	613 048 2884	LOCK
42	613 127 1548	DOOR,FRONT(FVH-P1400S)
OR	613 124 6201	DOOR,FRONT(FVH-P1440S)
OR	613 125 4930	DOOR,FRONT(FVH-P1400DK)
43	613 129 6121	COMPL PCB,TM-6(FVH-P1440S,SPAIN)
OR	613 122 1321	COMPL PCB,TM-6(FVH-P1440S,EUROPE)
44	613 121 7225	COMPL PCB,TB-4
45	613 121 7218	COMPL PCB,TB-3
46	613 122 8252	STAND,FRONT L
47	613 121 6594	TERMINAL(INCLUDED IN TB-3)

A : FVH-P1400S, DK
B : FVH-P1440S

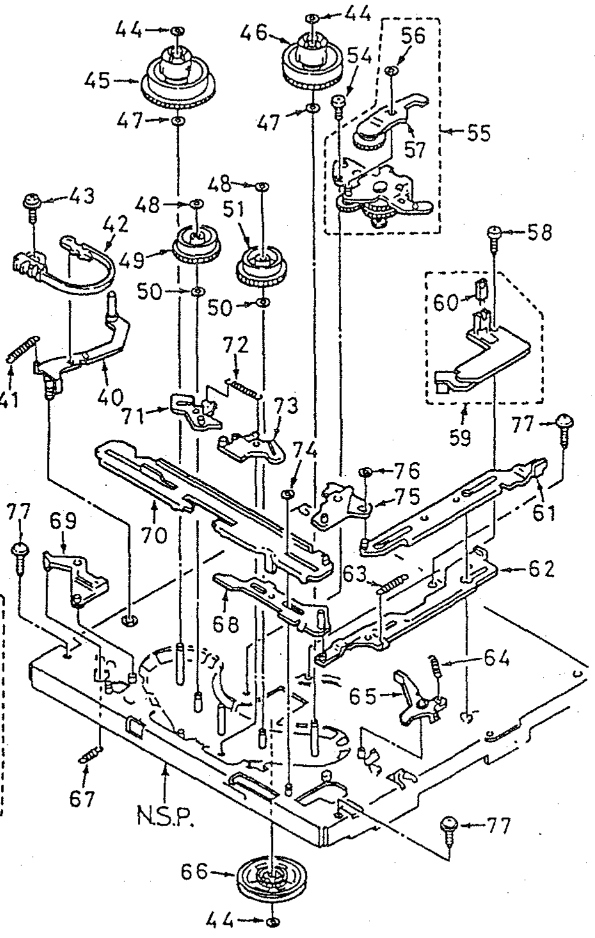


MECHANISM PARTS 1

LOCATION	PARTS NO.	DESCRIPTION
1	613 125 4855	COMPL,CASSETTE MECHA
4	613 022 0585	LID
5	407 098 3201	PHOTO COUPLE PN150SAN
6	411 015 9801	RING E 2.3
7	613 022 1643	SPRING,LINK L
8	613 022 0073	ASSY,GEAR,LEVER L
9	613 022 2695	RACK
10	613 022 2633	GEAR,LOCK
11	613 021 9916	ASSY,LEVER,PINION
12	613 022 2626	GEAR,PINION
13	613 021 9657	ASSY,BRACKET,GEAR
14	411 027 1305	SCR S-TPG BIN 2.6×4
15	613 006 4479	SPECIAL SWITCH
OR	613 095 0949	SPECIAL SWITCH
16	411 106 9208	SCR PAN+SW+W 2×9
17	613 022 0943	HOLDER,TRANSISTOR
18	613 022 2619	GEAR,IDLER
19	613 022 1667	SPRING,GEAR MAIN
20	613 022 2596	GEAR,MAIN
21	613 022 0097	ASSY,GEAR,LEVER R
22	613 022 1674	SPRING,LINK R
24	613 022 4064	BOARD,UNDER
27	613 124 5006	LEVER,SAFETY SWITCH
28	613 125 6149	SPRING,SAFETY SWITCH
31	411 001 8702	SCR BIN 3×6
40	613 100 0391	ASSY,LEVER,TENSION
41	613 085 7996	SPRING,LEVER TENSION
42	613 021 9701	ASSY,HOLDER,BAND
43	411 144 2803	SCR PAN+SW+W 2.6×6
OR	411 036 2805	SCR PAN+SW+W 2.6×6
44	411 109 1605	WASHER Y 2.6×6×0.25
45	613 022 0127	ASSY,REEL,SUPPLY
46	613 022 0110	ASSY,REEL,TAKE UP
47	412 021 5306	SPECIAL WASHER 3.1×6×0.3
OR	412 015 8900	SPECIAL WASHER 3.1×6×0.4
OR	412 015 8504	SPECIAL WASHER 3.1×6×0.5
48	411 109 1506	WASHER Y 2.1×6×0.25
OR	411 109 1407	WASHER Y 2.1×5×0.25
49	613 126 6148	GEAR,REEL SUPPLY
50	412 026 7305	SPECIAL WASHER 2.6×6×0.25
51	613 126 6155	GEAR,REEL TAKE UP
54	412 042 4302	SPECIAL SCREW 2.6×4
55	613 085 7101	COMPL,IDLER,CLUTCH
56	411 120 1301	WASHER Y 2.1×4×0.25
57	613 022 0134	ASSY,IDLER
58	411 021 3107	SCR S-TPG BIN 2.6×8
59	613 120 9053	COMPL,PCB,MC-4
60	407 016 7205	LED LN59
61	613 021 9985	ASSY,SLIDE,ACT PLATE
62	613 021 9992	ASSY,SLIDE,C BRAKE
63	613 022 1612	SPRING,RETURN SLIDE
64	613 022 1506	SPRING,SUB T
65	613 098 0106	ASSY,BRAKE,SUB T
66	613 077 3647	PULLEY,REEL
67	613 022 1490	SPRING,SUB SUPPLY
68	613 022 2374	SLIDE,ACT BRAKE
69	613 084 8871	BRAKE,SUB SUPPLY
70	613 022 0004	ASSY,SLIDE,M PLATE
71	613 080 9216	ASSY,BRAKE,SUPPLY
72	613 086 2914	SPRING,MAIN BRAKE
73	613 080 9209	ASSY,BRAKE,TAKE UP
74	411 109 3005	WASHER Y 2.6×5×0.5
75	613 022 2015	LEVER,CONT PLATE
76	412 015 9501	SPECIAL WASHER
77	411 021 7907	SCR S-TPG BIN 4×12

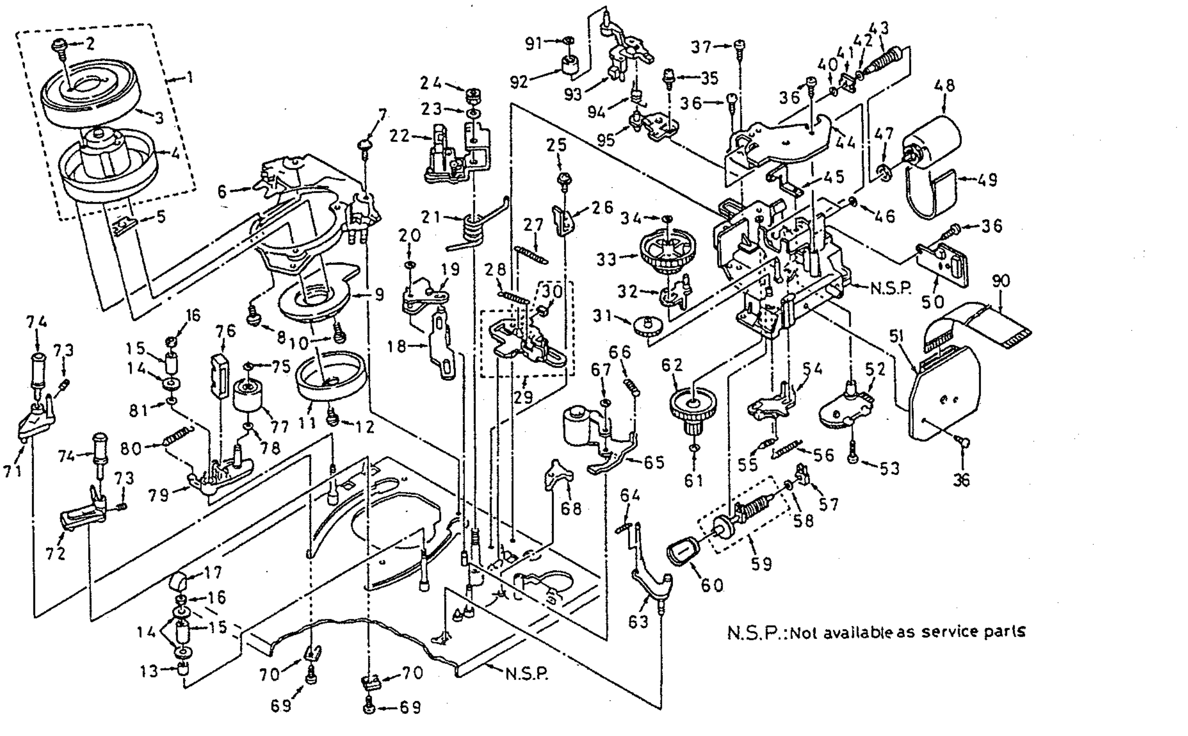


N.S.P.: Not available as service parts



MECHANISM PARTS 2

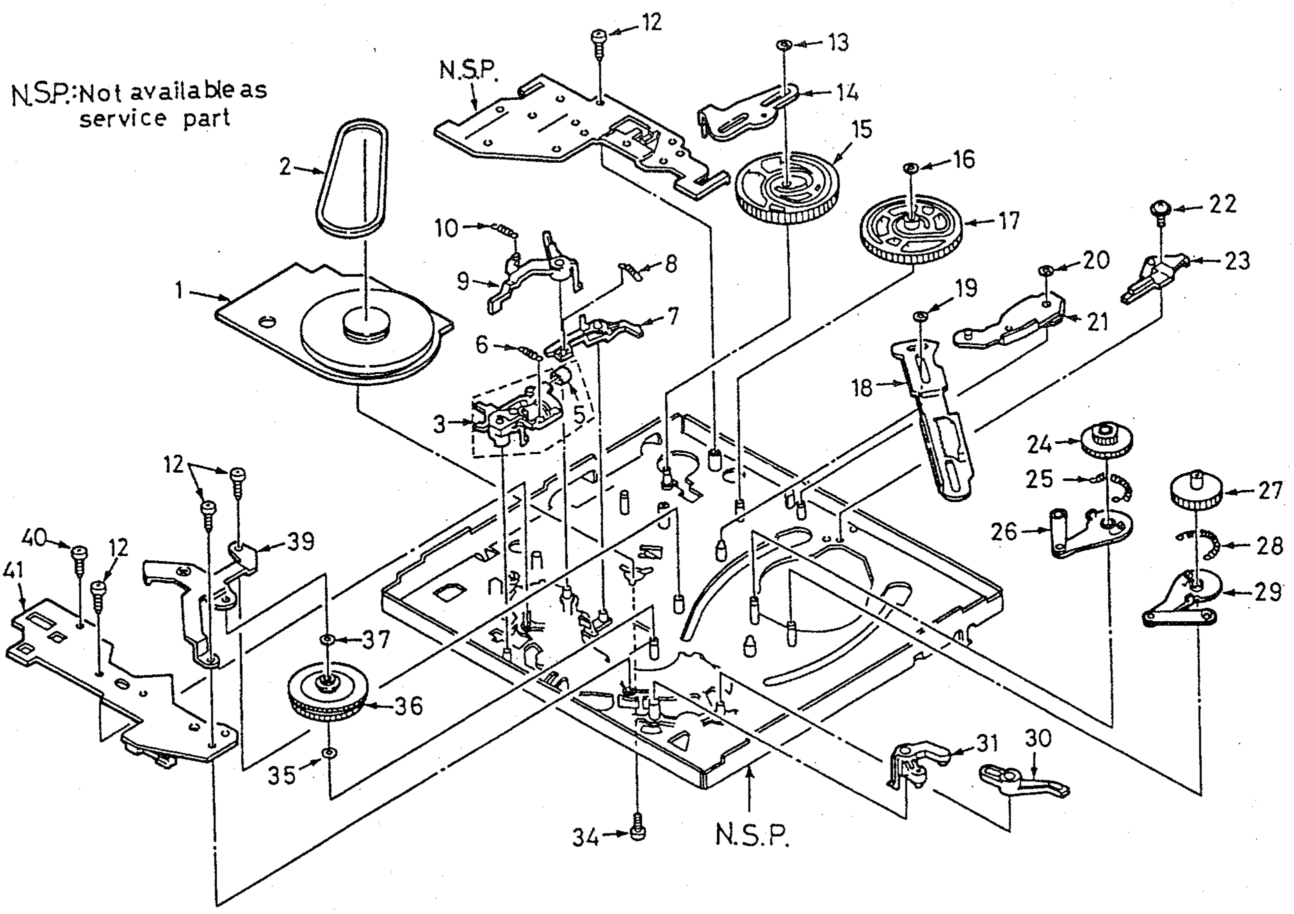
LOCATION	PARTS NO.	DESCRIPTION
1	613 096 2812	COMPL,CYLINDER,2N4P-R
OR	613 096 5059	COMPL,CYLINDER,2N4P-R
2	411 038 1608	SCR PAN+W 3×8
3	613 096 2829	ASSY,CYLINDER,UPR 2N4P-R
OR	613 096 5073	ASSY,CYLINDER,UPR 2N4P-R
4	613 022 0325	ASSY,CYLINDER,LWR 4
OR	613 078 8566	ASSY,CYLINDER,LWR 4
5	613 107 0509	SPACER,MOTOR,0.5T
6	613 088 9072	BASE,CYLINDER
7	411 047 7509	SCR PAN+FLG 3×6
8	411 047 5000	SCR PAN+FLG 2.6×8
9	613 085 7279	STATOR,MOTOR CYLINDER
10	411 044 9209	SCR PAN+SW 2.3×8
OR	411 044 8301	SCR PAN+SW 2.3×10
11	613 022 4019	ROTOR,MOTOR CYLINDER
12	411 044 9001	SCR PAN+SW 2.3×6
13	613 123 4802	SLEEVE
14	613 053 3227	SPECIAL WASHER
15	613 123 4970	TAPE GUIDE
16	412 026 2607	SPECIAL NUT (M3)
17	613 123 9418	CAP
18	613 021 9961	ASSY,SLIDE,ACT PINCH
19	613 021 9800	ASSY,LEVER,CAM PINCH
20	411 109 2008	WASHER Y 3.1×8×0.5
21	613 022 1797	SPRING,ACE HEAD
22	613 021 9640	COMPL,BRACKET,AC HEAD
23	613 110 1692	SLEEVE,AC HEAD
24	412 015 8207	SPECIAL NUT (M5)
25	411 120 0007	SCR PAN+SW+W 2.6×5
26	613 120 3631	BRACKET,STOPPER
27	613 022 1575	SPRING,LINK LOCK
28	613 022 1582	SPRING,SLIDE BRAKE
29	613 094 9233	ASSY,SLIDE,CAM
30	613 022 2725	DAMPER
31	613 022 2534	GEAR,FRONT LOAD
32	613 094 1206	ASSY,LEVER,FRONT
33	613 077 3586	GEAR,HELICAL FRONT
34	613 027 0504	WASHER 4.1×6.5×0.5
35	411 046 8002	SCR PAN+SW+W 2.6×6
36	411 023 2801	SCR S-TPG PAN 2.6×6
37	411 023 3303	SCR S-TPG PAN 2.6×8
OR	411 021 3107	SCR S-TPG BIN 2.6×8
40	613 053 2381	SPECIAL WASHER
41	613 077 3227	HOLDER,WORM
42	613 027 0382	WASHER
43	613 078 8320	ASSY,WORM,FRONT
44	613 117 0599	BRACKET,HOLDER
45	613 093 9159	PLATE,NUT
46	613 093 8374	DAMPER,MOTOR
47	613 077 3616	DAMPER,WORM
48	613 121 9960	ASSY,LOADING MOTOR
49	613 092 9945	DAMPER,MOTOR
50	613 120 9503	COMPL,PCB,MC-3
51	613 120 9510	COMPL,PCB,MC-2
52	613 110 0374	ROTARY SWITCH
53	411 126 5303	SCR PAN 2.6×13
54	613 092 9921	ASSY,SLIDE,FRONT
55	613 092 5985	SPRING,LEVER LOAD
56	613 092 5992	SPRING,LEVER ACT
57	613 092 5886	HOLDER,WORM
58	613 027 0627	WASHER 2.1×6×0.5
59	613 092 9938	ASSY,WORM,LOAD
60	613 022 2985	BELT,LOADING
61	412 033 4106	WASHER SLIT 2.6×5×0.5
62	613 077 3579	GEAR,HELICAL
63	613 102 9293	ASSY,LEVER,REV GUIDE
64	613 022 1568	SPRING,REVIEW LEVER
65	613 022 0158	COMPL,PINCH ROLLER
66	613 022 1483	SPRING,PINCH ROLLER
67	411 109 2107	WASHER Y 3.6×6×0.5
68	613 078 8160	COMPL,LEVER,ACT BRAKE
69	411 031 1209	SCR BIN 2.6×5
70	613 022 1919	PLATE,GUIDE
71	613 021 9725	ASSY,BASE,ROLLER S
72	613 021 9732	ASSY,BASE,ROLLER T
73	411 063 0904	SCR SET HEX-SCT 2×3
74	613 022 0233	ASSY,GUIDE,ROLLER
75	411 109 2602	WASHER Y 1.5×4×0.25
76	613 022 4224	HEAD,FULL ERASE
77	613 022 2817	IMPEDANCE ROLLER
78	412 032 5807	SPECIAL WASHER 2.1×5×0.13
79	613 093 8305	ASSY,LEVER,FE HEAD
80	613 022 1698	SPRING,ERASE HEAD
81	411 109 1704	WASHER Y 6.4×10×0.25
90	613 120 5703	FLEXIBLE FLAT CABLE 24
91	411 109 1803	WASHER Y 2.6×6×0.5
92	613 119 8562	ASSY,ROLLER,CLEANER
93	613 119 8548	ASSY,LEVER,CLEANER
94	613 119 8593	SPRING
95	613 119 8524	ASSY,BRACKET,CLEANER



N.S.P.:Not available as service parts

MECHANISM PARTS 3

LOCATION	PARTS NO.	DESCRIPTION
1	613 022 4491	MOTOR,CAPSTAN
2	613 022 2978	BELT,REEL DRIVE
3	613 021 9848	ASSY,LEVER,CLUTCH
5	613 079 1023	DAMPER,LEVER CLUTCH
6	613 022 1520	SPRING,LEVER CLUTCH
7	613 082 3434	LEVER,CHANGE CLUTCH
8	613 022 1711	SPRING,CHANGE CLUTCH
9	613 081 7518	ASSY,BRAKE CAPSTAN
10	613 098 2285	SPRING,CAPSTAN
12	411 021 3107	SCR S-TPG BIN 2.6×8
13	411 109 2008	WASHER Y 3.1×8×0.5
14	613 021 9978	ASSY,SLIDE,CAM PLATE
15	613 022 2701	CAM,MODE
16	411 109 1902	WASHER Y 3.1×6×0.5
17	613 120 1576	CAM,MAIN
18	613 022 2664	RACK,LOAD
19	411 109 1803	WASHER Y 2.6×6×0.5
20	411 109 2107	WASHER Y 3.6×6×0.5
OR	411 109 2206	WASHER Y 3.6×8×0.5
21	613 021 9794	ASSY,LEVER,CAM LOAD
22	411 047 6809	SCR PAN+FLG 3×4
23	613 021 9763	ASSY,EARTH,CYLINDER
24	613 090 6380	GEAR,LOAD TAKE UP
25	613 022 1551	SPRING,GEAR LOAD T
26	613 021 9879	ASSY,LEVER,LOAD T
27	613 090 6373	GEAR,LOAD SUPPLY
28	613 022 1704	SPRING,GEAR LOAD S
29	613 021 9862	ASSY,LEVER,LOAD S
30	613 022 2039	LEVER,RETURN TENSION
31	613 091 3104	ASSY,LEVER CONTROL
34	411 040 2303	SCR PAN 2.6×5
35	412 015 8603	SPECIAL WASHER 3.1×6×0.25
36	613 102 0900	ASSY,GEAR FRICTION
37	411 109 1605	WASHER Y 2.6×6×0.25
39	613 079 8121	BRACKET,PULLEY
40	411 100 0300	SCR S-TPG BIN 2.6×5
41	613 120 9060	COMPL,PCB,MC-1
R1	401 026 0607	CARBON 270 JA 1/6W
OR	401 017 0708	CARBON 270 JA 1/4W
R2	401 024 6700	CARBON 100 JA 1/6W
OR	401 012 4404	CARBON 100 JA 1/4W
D1	407 094 1300	PHOTO COUPLE SPI-315-04-C
OR	407 043 0101	PHOTO DIODE ON2170-R
SW1	613 022 4545	SPECIAL SWITCH,EP


N.S.P.:Not available as service part

ELECTRICAL PARTS

NOTE;

*Materials of Capacitors and Resistors are abbreviated as follows;

Resistors

MT-FILE	Metal Film Resistor
MT-GLAZE	Metal Glaze Resistor
OXIDE-MT	Oxide Metal Film Resistor

Capacitors

MT-POLYEST	Metallized Polyester Capacitor
MT-COMPO	Metallized Composite Capacitor
TA-SOLID	Tantalum Solid Capacitor
AL-SOLID	Aluminum Solid Capacitor
NP-ELECT	Non-Polarized Electrolytic Capacitor
OS-SOLID	Aluminum Solid Capacitors with Organic Semiconductive Electrolytic Capacitor
DL-ELECT	Double Layered Electrolytic Capacitor

*Tolerance of Capacitor(10pF over) and Resistor are noted with follow symboles.

F ············±1%　G ············±2%　J ············±5%　K ············±10%

M ············±20%　N ············±30%　Z ············+80% ~ −20%

*N.S.P. : Not available as service parts.

LOCATION	PARTS NO.	DESCRIPTION
COMPL PCB,CP-A		
COMPL.NO.	613 127 5942	(FVH-P1400S,EUROPE)
COMPL.NO.	613 128 5590	(FVH-P1400S,SPAIN)
COMPL.NO.	613 128 5620	(FVH-P1440S,SPAIN)
COMPL.NO.	613 124 7697	(FVH-P1440S,EUROPE)
COMPL.NO.	613 125 4640	(FVH-P1400DK)
VIDEO CIRCUIT(VD-A)		
C1001	403 025 7304	CERAMIC 4.7P K 50V
C1002	403 073 2702	CERAMIC 390P J 50V
C1003	403 026 2209	CERAMIC 47P J 50V
C1004	403 158 5604	NP-ELECT 0.47U M 50V
C1005	403 150 1703	CERAMIC 91P J 50V
C1006	403 071 1509	CERAMIC 180P J 50V
C1007	403 075 4001	CERAMIC 820P J 50V
C1008	403 161 6902	NP-ELECT 2.2U M 50V
C1009	403 001 1906	CERAMIC 0.01U M 16V
C1010	403 191 8808	ELECT 2.2U M 50V
C1011	403 193 8608	ELECT 0.47U M 50V
C1012	403 075 3103	CERAMIC 82P J 50V
C1013	403 068 8801	CERAMIC 100P J 50V
C1014	403 063 2200	POLYESTER 0.068U K 50V
C1015	403 001 1906	CERAMIC 0.01U M 16V
C1016	403 001 1906	CERAMIC 0.01U M 16V
C1017	403 001 1906	CERAMIC 0.01U M 16V
C1018	403 163 7907	ELECT 47U M 6.3V
C1019	403 191 8808	ELECT 2.2U M 50V
C1020	403 139 1502	ELECT 10U M 16V
C1021	403 139 2905	ELECT 2.2U M 50V
C1023	403 001 1906	CERAMIC 0.01U M 16V
C1024	403 162 1807	ELECT 22U M 10V
C1025	403 193 8608	ELECT 0.47U M 50V
C1031	403 001 1906	CERAMIC 0.01U M 16V
C1032	403 135 5009	ELECT 47U M 10V
C1033	403 109 6308	ELECT 1U M 50V
C1034	403 026 2209	CERAMIC 47P J 50V
C1035	403 025 7304	CERAMIC 4.7P K 50V
C1036	403 026 2209	CERAMIC 47P J 50V
C1037	403 121 3002	ELECT 4.7U M 25V
C1038	403 001 1906	CERAMIC 0.01U M 16V
C1039	403 001 1906	CERAMIC 0.01U M 16V
C1040	403 073 6205	CERAMIC 470P J 50V
C1101	403 214 0703	CERAMIC 0.022U J 16V
C1102	403 001 1906	CERAMIC 0.01U M 16V
C1103	403 109 6308	ELECT 1U M 50V
C1104	403 001 1906	CERAMIC 0.01U M 16V
C1105	403 109 6308	ELECT 1U M 50V
C1106	403 109 6308	ELECT 1U M 50V
C1107	403 214 0703	CERAMIC 0.022U J 16V
C1108	403 214 1106	CERAMIC 0.047U J 16V
C1109	403 001 1906	CERAMIC 0.01U M 16V
C1112	403 109 6308	ELECT 1U M 50V
C1113	403 214 1106	CERAMIC 0.047U J 16V
C1114	403 025 8608	CERAMIC 43P J 50V
C1115	403 150 1703	CERAMIC 91P J 50V
C1116	403 001 1906	CERAMIC 0.01U M 16V
C1117	403 163 7907	ELECT 47U M 6.3V
C1118	403 068 8801	CERAMIC 100P J 50V
C1119	403 001 1906	CERAMIC 0.01U M 16V
C1121	403 001 1906	CERAMIC 0.01U M 16V
C1124	403 121 0100	CERAMIC 0.082U J 16V
OR	403 214 1403	CERAMIC 0.082U J 16V
C1125	403 070 3702	CERAMIC 120P J 50V
C1126	403 001 1906	CERAMIC 0.01U M 16V
C1128	403 070 3702	CERAMIC 120P J 50V
C1201	403 073 2702	CERAMIC 390P J 50V
C1301	403 120 9005	CERAMIC 0.022U J 16V
OR	403 214 0703	CERAMIC 0.022U J 16V
C1351	403 014 2600	CERAMIC 18P J 50V
C1352	403 014 2600	CERAMIC 18P J 50V
C1401	403 139 2202	ELECT 4.7U M 25V
C1605	403 135 4101	ELECT 470U M 6.3V
C1608	403 121 2104	ELECT 22U M 10V
C1609	403 093 9606	OS-SOLID 1U M 16V
C1631	403 022 7703	CERAMIC 33P J 50V
C1632	403 024 1501	CERAMIC 39P J 50V
C1682	403 012 6006	CERAMIC 15P J 50V
CN101	613 120 7875	PLUG,8P
D1001	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1002	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1031	407 070 8408	ZENER DIODE GZS9.1Y-TB
OR	407 053 8906	ZENER DIODE MTZ9.1C-T-77
D1301	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1302	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1303	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1304	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1603	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1604	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1651	407 007 9904	DIODE GMA01-BT

LOCATION	PARTS NO.	DESCRIPTION
D1651	407 012 4406	DIODE 1SS133-T-77
DL131	613 116 7001	DELAY,2H
OR	613 117 4870	DELAY,2H
IC101	409 178 3309	IC LA7340
IC102	409 171 9209	IC LC8992
IC111	409 208 7208	IC LA7332
L1001	613 014 0951	COIL,INDUCTOR 68UHK
OR	613 014 4478	HF CHOKE 68UH K
L1031	613 014 0968	COIL,INDUCTOR 82UHK
OR	613 014 4485	HF CHOKE 82UH K
L1032	613 014 0739	COIL,INDUCTOR 1.0UHM
OR	613 014 4256	HF CHOKE 1.0UH K
L1101	613 014 0883	COIL,INDUCTOR 18UHK
OR	613 014 4409	HF CHOKE 18UH K
L1102	613 014 0791	COIL,INDUCTOR 3.3UHK
OR	613 014 4317	HF CHOKE 3.3UH K
L1103	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UH K
L1104	613 014 1019	COIL,INDUCTOR 220UHK
OR	613 014 4539	HF CHOKE 220UH K
L1105	613 014 0937	COIL,INDUCTOR 47UHK
OR	613 014 4454	HF CHOKE 47UH K
L1631	613 014 0975	COIL,INDUCTOR 100UHK
OR	613 014 4492	HF CHOKE 100UH K
L1681	613 014 0777	COIL,INDUCTOR 2.2UHM
OR	613 014 4294	HF CHOKE 2.2UH K
Q1001	405 093 0508	TR KSA1175-Y
OR	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
Q1002	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
Q1003	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
Q1004	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
Q1031	405 093 0508	TR KSA1175-Y
OR	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
Q1032	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
Q1051	405 093 0508	TR KSA1175-Y
OR	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
Q1101	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q1102	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q

LOCATION	PARTS NO.	DESCRIPTION
Q1102	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
Q1103	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
Q1104	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
Q1105	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 093 0607	TR KSC2785-Y
Q1106	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 093 0607	TR KSC2785-Y
Q1151	405 093 0508	TR KSA1175-Y
OR	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
Q1201	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
Q1301	405 093 0508	TR KSA1175-Y
OR	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
Q1302	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
Q1351	405 003 7603	TR 2SA1345-AC
OR	405 000 2205	TR DTA144ES-DCTP
Q1401	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
Q1402	405 086 4506	TR KSA643C-Y
OR	405 006 6504	TR 2SA984-E-AA
OR	405 006 6702	TR 2SA984-F-AA
Q1403	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
Q1404	405 009 7003	TR 2SB985-T-AE
Q1601	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1806	TR 2SA933S-T93-R
Q1602	405 093 0508	TR KSA1175-Y
OR	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
Q1621	405 064 0100	TR 2SA1561-TL2-Q(FVH-P1400S,DK)
OR	405 064 0209	TR 2SA1561-TL2-R(FVH-P1400S,DK)
Q1631	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
R1001	401 022 3008	CARBON 6.8K JA 1/4W
R1002	401 017 1705	CARBON 2.7K JA 1/4W
R1003	401 022 1806	CARBON 680 JA 1/4W
R1004	401 012 9201	CARBON 1M JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R1005	401 012 5609	CARBON 1K JA 1/4W
R1006	401 017 1705	CARBON 2.7K JA 1/4W
R1007	401 012 5609	CARBON 1K JA 1/4W
R1008	401 022 1806	CARBON 680 JA 1/4W
R1009	401 012 5609	CARBON 1K JA 1/4W
R1010	401 017 8506	CARBON 300 JA 1/4W
R1011	401 015 2605	CARBON 1.8K JA 1/4W
R1012	401 015 4609	CARBON 180K JA 1/4W
R1013	401 012 9201	CARBON 1M JA 1/4W
R1014	401 016 3700	CARBON 2.2K JA 1/4W
R1015	401 023 2703	CARBON 8.2K JA 1/4W
R1016	401 013 5202	CARBON 1.2K JA 1/4W
R1017	401 018 4804	CARBON 33K JA 1/4W
R1018	401 012 5609	CARBON 1K JA 1/4W
R1019	401 019 0904	CARBON 390 JA 1/4W (FVH-P1400S,DK)
OR	401 016 2505	CARBON 220 JA 1/4W (FVH-P1440S)
R1020	401 020 3802	CARBON 470K JA 1/4W
R1021	401 014 6000	CARBON 150K JA 1/4W
R1022	401 022 1806	CARBON 680 JA 1/4W
R1023	401 016 4707	CARBON 22K JA 1/4W
R1024	401 020 2805	CARBON 47K JA 1/4W
R1025	401 016 3700	CARBON 2.2K JA 1/4W
R1026	401 012 5609	CARBON 1K JA 1/4W
R1031	401 012 5609	CARBON 1K JA 1/4W
R1032	401 020 0702	CARBON 470 JA 1/4W
R1033	401 018 9700	CARBON 39 JA 1/4W
R1034	401 018 9700	CARBON 39 JA 1/4W
R1035	401 018 9700	CARBON 39 JA 1/4W
R1051	401 012 4404	CARBON 100 JA 1/4W
R1052	401 012 5609	CARBON 1K JA 1/4W
R1101	401 020 2805	CARBON 47K JA 1/4W
R1102	401 016 4707	CARBON 22K JA 1/4W
R1103	401 012 5609	CARBON 1K JA 1/4W
R1104	401 013 5202	CARBON 1.2K JA 1/4W
R1105	401 018 2701	CARBON 330 JA 1/4W
R1106	401 021 1807	CARBON 560 JA 1/4W
R1107	401 012 5609	CARBON 1K JA 1/4W
R1108	401 012 5609	CARBON 1K JA 1/4W
R1109	401 012 6903	CARBON 10K JA 1/4W
R1110	401 023 2703	CARBON 8.2K JA 1/4W
R1111	401 012 5609	CARBON 1K JA 1/4W
R1112	401 015 2605	CARBON 1.8K JA 1/4W
R1113	401 012 8006	CARBON 100K JA 1/4W
R1114	401 019 0904	CARBON 390 JA 1/4W
R1115	401 012 5609	CARBON 1K JA 1/4W
R1116	401 019 1802	CARBON 3.9K JA 1/4W
R1117	401 014 4006	CARBON 1.5K JA 1/4W
R1118	401 022 7105	CARBON 750 JA 1/4W
R1119	401 012 5609	CARBON 1K JA 1/4W
R1120	401 012 4404	CARBON 100 JA 1/4W
R1121	401 012 5609	CARBON 1K JA 1/4W
R1122	401 020 0702	CARBON 470 JA 1/4W
R1123	401 014 4006	CARBON 1.5K JA 1/4W
R1124	401 015 8805	CARBON 200 JA 1/4W
R1125	401 023 1607	CARBON 820 JA 1/4W
R1126	401 012 5609	CARBON 1K JA 1/4W
R1127	401 016 2505	CARBON 220 JA 1/4W
R1128	401 018 2701	CARBON 330 JA 1/4W
R1152	401 012 5609	CARBON 1K JA 1/4W
R1301	401 012 6903	CARBON 10K JA 1/4W
R1302	401 012 5609	CARBON 1K JA 1/4W
R1303	401 012 5609	CARBON 1K JA 1/4W
R1304	401 020 2805	CARBON 47K JA 1/4W
R1305	401 016 4707	CARBON 22K JA 1/4W
R1306	401 015 4609	CARBON 180K JA 1/4W
R1351	401 016 3700	CARBON 2.2K JA 1/4W
R1352	401 016 3700	CARBON 2.2K JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R1401	401 016 4707	CARBON 22K JA 1/4W
R1402	401 016 4707	CARBON 22K JA 1/4W
R1403	401 020 1907	CARBON 4.7K JA 1/4W
R1404	401 020 1907	CARBON 4.7K JA 1/4W
R1405	401 020 2805	CARBON 47K JA 1/4W
R1406	401 020 2805	CARBON 47K JA 1/4W
R1407	401 015 2605	CARBON 1.8K JA 1/4W
R1408	401 016 2505	CARBON 220 JA 1/4W
R1607	401 021 1807	CARBON 560 JA 1/4W
R1608	401 022 6702	CARBON 75 JA 1/4W
R1609	401 013 9408	CARBON 1.3K JA 1/4W
R1610	401 021 1807	CARBON 560 JA 1/4W
R1621	401 021 1807	CARBON 560 JA 1/4W (FVH-P1400S,DK)
R1631	401 021 2903	CARBON 5.6K JA 1/4W
R1632	401 012 5609	CARBON 1K JA 1/4W
R1633	401 023 1607	CARBON 820 JA 1/4W
R1634	401 015 2605	CARBON 1.8K JA 1/4W
R1641	401 015 2605	CARBON 1.8K JA 1/4W
TH101	407 142 4208	THERMISTOR TD5-C310DB
VR101	613 079 2525	VR,SEMI 1KB
OR	613 120 8537	VR,SEMI 1KB
VR102	613 079 2532	VR,SEMI 10KB
OR	613 120 8544	VR,SEMI 10KB
VR103	613 120 8506	VR,SEMI 4.7KB
OR	613 120 8650	VR,SEMI 4.7KB
VR104	613 079 2532	VR,SEMI 10KB
OR	613 120 8544	VR,SEMI 10KB
VR105	613 079 2525	VR,SEMI 1KB
OR	613 120 8537	VR,SEMI 1KB
X1101	613 080 9407	OSC.CRYSTAL 4.43MHZ
OR	613 093 8008	OSC.CRYSTAL 4.433619MHZ
OR	613 120 8865	OSC.CRYSTAL 4.433619MHZ
XF101	613 004 5539	LC PACK 4MHZ LPF
XF111	613 004 5485	LC PACK

AUDIO CIRCUIT(AD-A)

LOCATION	PARTS NO.	DESCRIPTION
C2001	403 049 1401	ELECT 1U M 50V
C2002	403 075 4506	CERAMIC 820P K 50V
C2004	403 167 6500	ELECT 33U M 6.3V
C2005	403 150 0201	CERAMIC 0.018U K 16V
C2006	403 193 8608	ELECT 0.47U M 50V
C2008	403 001 7601	CERAMIC 4700P M 16V
C2009	403 163 7907	ELECT 47U M 6.3V
C2010	403 107 9905	ELECT 10U M 16V
C2013	403 003 2406	CERAMIC 0.022U J 25V
C2016	403 109 6308	ELECT 1U M 50V
C2017	403 149 0700	ELECT 33U M 16V
C2018	403 191 8600	ELECT 4.7U M 25V
C2019	403 163 8409	ELECT 47U M 16V
C2020	403 071 6207	CERAMIC 220P K 50V
C2021	403 081 7409	POLYPRO 0.033U J 100V
C2022	403 129 0409	CERAMIC 0.01U K 16V
C2024	403 129 0409	CERAMIC 0.01U K 16V
C2025	403 003 3700	CERAMIC 0.022U Z 25V
C2051	403 069 1207	CERAMIC 1000P K 50V
C2071	403 075 4506	CERAMIC 820P K 50V
C2072	403 191 8709	ELECT 1U M 50V
C2073	403 003 6503	CERAMIC 0.033U J 25V
OR	403 104 7706	CERAMIC 0.033U J 25V
IC201	409 128 4905	IC LA7295
L2002	613 014 3532	HF CHOKE 10000UH J

LOCATION	PARTS NO.	DESCRIPTION
L2003	613 014 3259	HF CHOKE 560UH K
Q2001	405 024 9709	TR 2SD734-E-AA
OR	405 024 9907	TR 2SD734-F-AA
R2001	401 012 4404	CARBON 100 JA 1/4W
R2002	401 017 1705	CARBON 2.7K JA 1/4W
R2003	401 023 0600	CARBON 82 JA 1/4W
R2004	401 019 3905	CARBON 390K JA 1/4W
R2005	401 021 8905	CARBON 6.2K JA 1/4W
R2006	401 017 1705	CARBON 2.7K JA 1/4W
R2009	401 018 6501	CARBON 3.3M JA 1/4W
R2010	401 012 6903	CARBON 10K JA 1/4W
R2011	401 016 0006	CARBON 20K JA 1/4W
R2012	401 022 7600	CARBON 7.5K JA 1/4W
R2013	401 012 5609	CARBON 1K JA 1/4W
R2014	401 015 2605	CARBON 1.8K JA 1/4W
R2016	401 012 6903	CARBON 10K JA 1/4W
R2017	401 012 6903	CARBON 10K JA 1/4W
R2018	401 015 3701	CARBON 18K JA 1/4W
R2019	401 015 3701	CARBON 18K JA 1/4W
R2021	401 012 3308	CARBON 10 JA 1/4W
R2022	401 019 9501	CARBON 47 JA 1/4W
R2023	401 014 5102	CARBON 15K JA 1/4W
R2024	401 019 6104	CARBON 4.7 JA 1/4W
R2051	401 012 5609	CARBON 1K JA 1/4W
R2071	401 013 4106	CARBON 120 JA 1/4W
R2072	401 012 6903	CARBON 10K JA 1/4W
R2091	401 021 8905	CARBON 6.2K JA 1/4W
R2092	401 023 2703	CARBON 8.2K JA 1/4W
		(EXCEPT FVH-P1400DK)
OR	401 012 6903	CARBON 10K JA 1/4W
		(FVH-P1400DK)
R2101	401 012 6903	CARBON 10K JA 1/4W
R2102	401 018 7904	CARBON 3.6K JA 1/4W
R2105	401 012 5609	CARBON 1K JA 1/4W
R2106	401 014 8509	CARBON 1.6K JA 1/4W
		(EXCEPT FVH-P1400DK)
OR	401 021 8103	CARBON 620 JA 1/4W
		(FVH-P1400DK)
R2109	401 012 5609	CARBON 1K JA 1/4W
R2110	401 023 1607	CARBON 820 JA 1/4W
R2116	401 012 5609	CARBON 1K JA 1/4W
T2001	613 016 2205	OSC COIL 70KHZ
OR	613 094 3378	TRANS,OSC 70KHZ
VR201	613 001 9097	SEMI VR 100KB
OR	613 097 7915	VR,SEMI 100KB

SYSTEM CONTROL CIRCUIT(SY-A)

LOCATION	PARTS NO.	DESCRIPTION
C3001	403 017 0207	CERAMIC 20P J 50V
C3002	403 017 9705	CERAMIC 22P J 50V
C3003	403 002 4708	CERAMIC 0.1U Z 25V
C3004	403 002 4708	CERAMIC 0.1U Z 25V
C3005	403 001 1906	CERAMIC 0.01U M 16V
C3006	403 107 9905	ELECT 10U M 16V
C3007	403 070 4105	CERAMIC 120P K 50V
C3008	403 121 9509	CERAMIC 0.1U Z 50V
C3009	403 072 8200	CERAMIC 330P K 50V
C3071	403 001 1906	CERAMIC 0.01U M 16V
C3072	403 070 7205	CERAMIC 150P J 50V
C3073	403 001 1906	CERAMIC 0.01U M 16V
C3074	403 001 1906	CERAMIC 0.01U M 16V
C3075	403 001 1906	CERAMIC 0.01U M 16V
C3301	403 135 4101	ELECT 470U M 6.3V
C3302	403 002 4708	CERAMIC 0.1U Z 25V
C3303	403 002 4708	CERAMIC 0.1U Z 25V
CN301	613 120 9176	PLUG,20P
CN302	613 120 9176	PLUG,20P
D3001	407 051 6904	ZENER DIODE GZS5.6Y-BT
OR	407 099 5303	ZENER DIODE MTZJ5.6B-T-77
D3002	407 070 8101	ZENER DIODE GZS8.2Y-BT
OR	407 063 9504	ZENER DIODE MTZJ8.2B-T-77
D3003	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D3007	407 120 5807	DIODE AK04-V2(FVH-P1440S)
IC301	410 124 1201	IC UPD75237GJ-018-5BG(FVH-P1400S)
OR	410 125 1606	IC UPD75238GJ-019-5BG(FVH-P1440S)
OR	410 124 1102	IC UPD75237GJ-015-5BG(FVH-P1400DK)
IC302	409 032 3308	IC MN1280-L
OR	409 243 4101	IC MN1380-L
L3071	613 014 0883	COIL,INDUCTOR 18UHK
Q3001	405 018 2808	TR 2SC3402-AC
OR	405 000 3103	TR DTC114ES-DCTP
Q3002	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
Q3003	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
Q3004	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
Q3071	405 016 1100	TR 2SC2839-F-SPA-AC
OR	405 016 0905	TR 2SC2839-E-SPA-AC
OR	405 012 9506	TR 2SC2058S-DCTP-Q
Q3072	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 011 8500	TR 2SC1740S-DCTP-R
R3001	401 018 5702	CARBON 330K JA 1/4W
R3002	401 012 8006	CARBON 100K JA 1/4W
R3003	401 012 8006	CARBON 100K JA 1/4W
R3004	401 012 8006	CARBON 100K JA 1/4W
R3005	401 020 2805	CARBON 47K JA 1/4W
R3006	401 020 2805	CARBON 47K JA 1/4W
R3007	401 014 4006	CARBON 1.5K JA 1/4W
R3008	401 013 6308	CARBON 12K JA 1/4W
R3009	401 020 2805	CARBON 47K JA 1/4W
R3010	401 020 2805	CARBON 47K JA 1/4W
R3012	401 012 6903	CARBON 10K JA 1/4W
R3014	401 020 2805	CARBON 47K JA 1/4W
R3015	401 012 6903	CARBON 10K JA 1/4W
R3016	401 012 6903	CARBON 10K JA 1/4W
R3017	401 012 6903	CARBON 10K JA 1/4W
R3018	401 012 5609	CARBON 1K JA 1/4W
R3019	401 012 6903	CARBON 10K JA 1/4W
		(FVH-P1440S)
R3020	401 015 1509	CARBON 180 JA 1/4W
R3071	401 023 2703	CARBON 8.2K JA 1/4W
R3072	401 016 3700	CARBON 2.2K JA 1/4W
R3073	401 012 5609	CARBON 1K JA 1/4W
R3074	401 018 2701	CARBON 330 JA 1/4W
R3075	401 016 2505	CARBON 220 JA 1/4W
R3076	401 016 5704	CARBON 220K JA 1/4W
R3077	401 017 2702	CARBON 27K JA 1/4W
R3078	401 018 4804	CARBON 33K JA 1/4W
R3079	401 018 4804	CARBON 33K JA 1/4W
R3305	401 012 6903	CARBON 10K JA 1/4W
R3306	401 016 4707	CARBON 22K JA 1/4W
R3307	401 012 6903	CARBON 10K JA 1/4W
X3001	613 089 4069	RESONATOR,CERAMIC 6MHZ
OR	613 108 9570	RESONATOR,CERAMIC 6MHZ
OR	613 122 1444	RESONATOR,CERAMIC 6.0MHZ
OR	613 124 2135	RESONATOR,CERAMIC 6MHZ

LOCATION	PARTS NO.	DESCRIPTION
X3002	613 109 0972	OSC.CRYSTAL 32KHZ

SERVO CIRCUIT(SV-A)

LOCATION	PARTS NO.	DESCRIPTION
D3701	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3702	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
Q3701	405 003 7603	TR 2SA1345-AC
OR	405 000 2205	TR DTA144ES-DCTP
R3701	401 018 4804	CARBON 33K JA 1/4W
R3702	401 012 6903	CARBON 10K JA 1/4W
R3703	401 012 6903	CARBON 10K JA 1/4W
R3704	401 012 8006	CARBON 100K JA 1/4W
VR351	613 097 7953	VR,SEMI 220KB
OR	613 001 9110	SEMI VR 220KB
VR353	613 112 4936	VR,SEMI 500KB
OR	613 001 9486	SEMI VR 500KB
VR354	613 112 4936	VR,SEMI 500KB
OR	613 001 9486	SEMI VR 500KB

POWER SUPPLY CIRCUIT(PW-A),FVH-P1400S,DK

LOCATION	PARTS NO.	DESCRIPTION
C5402	403 163 7907	ELECT 47U M 6.3V
CN541	613 120 7882	PLUG,12P
D5403	407 053 3109	ZENER DIODE MTZ12A-T-77
D5404	407 078 2705	DIODE 1SS244-T-77
D5405	407 078 0305	ZENER DIODE MTZ24B-T-77
D5406	407 053 8005	ZENER DIODE MTZ7.5B-T-77
L5471	613 015 6631	COIL,INDUCTOR 15UHK
OR	613 014 8667	HF CHOKE 15UH K
Q5401	405 088 9103	TR 2SA1703-S-AN
Q5402	405 089 2103	TR 2SC4483-S-AN
Q5403	405 006 7006	TR 2SA984K-E-AA
OR	405 006 7204	TR 2SA984K-F-AA
Q5404	405 006 7006	TR 2SA984K-E-AA
OR	405 006 7204	TR 2SA984K-F-AA
R5401	401 021 8905	CARBON 6.2K JA 1/4W
R5402	401 016 3700	CARBON 2.2K JA 1/4W
R5403	401 012 5609	CARBON 1K JA 1/4W
R5404 ⚠	402 060 3708	FUSIBLE RES 1.5K JA 1/4W (FVH-P1400S)
OR ⚠	402 041 5608	FUSIBLE RES 820 JA 1/4W (FVH-P1400DK)
R5405	401 021 2903	CARBON 5.6K JA 1/4W (FVH-P1400S)
OR	401 018 3708	CARBON 3.3K JA 1/4W (FVH-P1400DK)
R5406	401 014 5102	CARBON 15K JA 1/4W
R5407	401 019 7705	CARBON 4.3K JA 1/4W
R5408 ⚠	402 004 1906	FUSIBLE RES 47 JA 1/4W
R5409	401 013 6308	CARBON 12K JA 1/4W
R5410	401 016 2505	CARBON 220 JA 1/4W
R5411	401 016 2505	CARBON 220 JA 1/4W

POWER SUPPLY CIRCUIT(PW-A),FVH-P1440S

LOCATION	PARTS NO.	DESCRIPTION
C5401	403 001 1609	CERAMIC 0.01U K 16V
C5402	403 163 7907	ELECT 47U M 6.3V
C5403	403 069 1207	CERAMIC 1000P K 50V
CN541	613 120 7882	PLUG,12P
D5401	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D5402	407 063 8705	ZENER DIODE MTZJ5.1C-T-77
D5403	407 053 7701	ZENER DIODE MTZ6.8C-T-77
D5404	407 078 2705	DIODE 1SS244-T-77
D5405	407 078 0305	ZENER DIODE MTZ24B-T-77
D5406	407 099 5105	ZENER DIODE MTZJ4.7B-T-77
D5411	407 120 5807	DIODE AK04-V2
D5422	407 063 8903	ZENER DIODE MTZJ5.6C-T-77
Q5401	405 088 9103	TR 2SA1703-S-AN
Q5402	405 089 2103	TR 2SC4483-S-AN
Q5403	405 006 7006	TR 2SA984K-E-AA
OR	405 006 7204	TR 2SA984K-F-AA
Q5404	405 006 7204	TR 2SA984K-F-AA
OR	405 006 7006	TR 2SA984K-E-AA
Q5421	405 089 2103	TR 2SC4483-S-AN
R5401	401 021 8905	CARBON 6.2K JA 1/4W
R5402	401 016 3700	CARBON 2.2K JA 1/4W
R5403	401 012 5609	CARBON 1K JA 1/4W
R5404 ⚠	402 041 5608	FUSIBLE RES 820 JA 1/4W
R5405	401 021 2903	CARBON 5.6K JA 1/4W
R5406	401 014 5102	CARBON 15K JA 1/4W
R5407	401 019 7705	CARBON 4.3K JA 1/4W
R5408 ⚠	402 004 1906	FUSIBLE RES 47 JA 1/4W
R5409	401 013 6308	CARBON 12K JA 1/4W
R5421	401 012 5609	CARBON 1K JA 1/4W

TUNER CIRCUIT(TN-A),EXCEPT FVH-P1400DK

LOCATION	PARTS NO.	DESCRIPTION
C6006	403 125 5606	ELECT 100U M 16V
C6008	403 109 6308	ELECT 1U M 50V
C6009	403 135 7409	ELECT 22U M 50V
C6010	403 121 9509	CERAMIC 0.1U Z 50V
C6015	403 002 4708	CERAMIC 0.1U Z 25V
C6017	403 073 6205	CERAMIC 470P J 50V
D6001	407 078 1104	ZENER DIODE MTZ33A-T-77
OR	407 078 1203	ZENER DIODE MTZ33B-T-77
IC602	409 148 5005	IC M6M80021P
OR	409 247 9706	IC XRM9021B
L6001	613 015 2695	HF CHOKE 56UH K
L6004	613 014 0821	COIL,INDUCTOR 5.6UHK
L6007	613 014 0821	COIL,INDUCTOR 5.6UHK
Q6002	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q6003	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
Q6005	405 003 7603	TR 2SA1345-AC
OR	405 000 2205	TR DTA144ES-DCTP
OR	405 063 9104	TR DTA144EL-TL2
Q6006	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
R6001	401 018 2701	CARBON 330 JA 1/4W
R6002	401 019 0904	CARBON 390 JA 1/4W
R6006	401 019 3905	CARBON 390K JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R6007	401 017 3709	CARBON 270K JA 1/4W
R6008	401 012 5609	CARBON 1K JA 1/4W
R6010	401 012 6903	CARBON 10K JA 1/4W
R6014	401 015 9406	CARBON 2K JA 1/4W
R6026	401 018 5702	CARBON 330K JA 1/4W

TUNER CIRCUIT(TN-A),FVH-P1400DK

C6001	403 002 4708	CERAMIC 0.1U Z 25V
C6002	403 121 3002	ELECT 4.7U M 25V
C6003	403 109 6308	ELECT 1U M 50V
C6004	403 067 5603	MT-COMPO 0.1U J 50V
OR	403 065 8002	MT-POLYEST 0.1U J 63V
OR	403 168 6103	MT-POLYEST 0.1U J 50V
C6005	403 121 3002	ELECT 4.7U M 25V
C6006	403 125 5606	ELECT 100U M 16V
C6007	403 143 2809	CERAMIC 0.047U Z 50V
C6008	403 109 6308	ELECT 1U M 50V
C6009	403 135 7409	ELECT 22U M 50V
C6010	403 121 9509	CERAMIC 0.1U Z 50V
C6012	403 121 9509	CERAMIC 0.1U Z 50V
C6014	403 018 6109	CERAMIC 220P J 50V
C6015	403 002 4708	CERAMIC 0.1U Z 25V
C6017	403 073 6205	CERAMIC 470P J 50V
IC601	409 026 8203	IC L5631
OR	409 057 5103	IC UPC574J
IC602	409 148 5005	IC M6M80021P
OR	409 199 5306	IC M6M80011AP
OR	409 247 9706	IC XRM9021B
L6003	613 014 0852	COIL,INDUCTOR 10UHK
OR	613 014 4379	HF CHOKE 10UH K
L6005	613 014 0852	COIL,INDUCTOR 10UHK
OR	613 014 4379	HF CHOKE 10UH K
L6006	613 014 0852	COIL,INDUCTOR 10UHK
OR	613 014 4379	HF CHOKE 10UH K
Q6001	405 027 8709	TR 2SK68A-K
OR	405 057 9301	TR 2SK68A-L1
OR	405 040 0605	TR 2SK222-C
OR	405 026 9004	TR 2SK222-D
Q6002	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q6003	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
Q6004	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
Q6005	405 003 7603	TR 2SA1345-AC
OR	405 000 2205	TR DTA144ES-DCTP
OR	405 063 9104	TR DTA144EL-TL2
Q6006	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
R6001	401 018 2701	CARBON 330 JA 1/4W
R6002	401 019 0904	CARBON 390 JA 1/4W
R6003	401 012 9201	CARBON 1M JA 1/4W
R6004	401 012 9201	CARBON 1M JA 1/4W
R6005	401 021 9902	CARBON 620K JA 1/4W
R6006	401 019 3905	CARBON 390K JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R6007	401 020 3802	CARBON 470K JA 1/4W
R6008	401 012 5609	CARBON 1K JA 1/4W
R6010	401 012 6903	CARBON 10K JA 1/4W
R6011	401 012 8006	CARBON 100K JA 1/4W
R6012	401 012 8006	CARBON 100K JA 1/4W

RF CONVERTER CIRCUIT(CV-A)

C6601	403 134 8100	ELECT 100U M 6.3V
C6602	403 139 1502	ELECT 10U M 16V (EXCEPT FVH-P1400DK)
L6601	613 015 6631	COIL,INDUCTOR 15UHK
OR	613 014 8667	HF CHOKE 15UH K
L6602	613 015 6631	COIL,INDUCTOR 15UHK
OR	613 014 8667	HF CHOKE 15UH K

COMPL PCB,VD-1

COMPL.NO. 613 120 6076

B1701	405 018 2402	TR 2SC3398-TB
OR	405 000 2908	TR DTC114EK-T96
C1701	403 069 5601	CERAMIC 0.01U K 50V
C1702	403 033 4609	CERAMIC 82P J 50V
OR	403 033 6603	CERAMIC 82P J 50V
C1703	403 189 2405	ELECT 10U M 16V
C1704	403 068 0409	CERAMIC 0.1U Z 25V
C1705	403 189 2405	ELECT 10U M 16V
C1706	403 069 5601	CERAMIC 0.01U K 50V
D1701	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
IC171	409 003 4907	IC BA7025L
J1701	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
Q1701	405 015 9701	TR 2SC2814-F4-TB
OR	405 035 6100	TR 2SC2413K-T96-Q
R1701	401 037 5608	MT-GLAZE 10K JA 1/10W
R1702	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R1703	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R1704	401 037 5400	MT-GLAZE 1K JA 1/10W
R1705	401 038 0800	MT-GLAZE 22K JA 1/10W
R1706	401 037 5400	MT-GLAZE 1K JA 1/10W
R1707	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1708	401 037 8104	MT-GLAZE 150K JA 1/10W
R1709	401 038 5805	MT-GLAZE 430 JA 1/10W
R1710	401 038 0800	MT-GLAZE 22K JA 1/10W
R1711	401 037 5608	MT-GLAZE 10K JA 1/10W
XF171	613 084 1681	FILTER 4.16MHZ B.F
XF172	613 015 8604	CHOKE COIL

COMPL PCB,VP-1

COMPL.NO. 613 121 6495

C1801	403 071 8102	CERAMIC 2200P K 50V
C1802	403 071 8102	CERAMIC 2200P K 50V
C1803	403 071 8102	CERAMIC 2200P K 50V
C1804	403 073 1200	CERAMIC 0.033U K 50V
C1806	403 071 8102	CERAMIC 2200P K 50V
C1807	403 073 1200	CERAMIC 0.033U K 50V
C1808	403 073 1200	CERAMIC 0.033U K 50V
C1812	403 069 5601	CERAMIC 0.01U K 50V
C1813	403 069 5601	CERAMIC 0.01U K 50V
C1814	403 073 1200	CERAMIC 0.033U K 50V

LOCATION	PARTS NO.	DESCRIPTION
C1815	403 069 5601	CERAMIC 0.01U K 50V
C1816	403 069 5601	CERAMIC 0.01U K 50V
C1817	403 069 1702	CERAMIC 1000P K 50V
C1818	403 024 7206	CERAMIC 390P J 50V
C1819	403 023 4503	CERAMIC 330P J 50V
C1820	403 028 4201	CERAMIC 56P J 50V
C1821	403 026 2902	CERAMIC 47P J 50V
C1822	403 033 4609	CERAMIC 82P J 50V
C1823	403 191 8709	ELECT 1U M 50V
C1824	403 193 7809	ELECT 100U M 16V
C1825	403 154 3307	OS-SOLID 4.7U M 10V
C1827	403 069 5601	CERAMIC 0.01U K 50V
C1851	403 014 9302	CERAMIC 180P J 50V
C1852	403 031 2201	CERAMIC 680P J 50V
C1853	403 018 0602	CERAMIC 22P J 50V
C1855	403 028 4201	CERAMIC 56P J 50V
C1856	403 069 5601	CERAMIC 0.01U K 50V
C1857	403 069 5601	CERAMIC 0.01U K 50V
C1858	403 009 5807	CERAMIC 100P J 50V
C1859	403 026 2902	CERAMIC 47P J 50V
C1860	403 069 5601	CERAMIC 0.01U K 50V
C1861	403 069 5601	CERAMIC 0.01U K 50V
C1862	403 163 7907	ELECT 47U M 6.3V
C1891	403 191 8709	ELECT 1U M 50V
C1892	403 073 1200	CERAMIC 0.033U K 50V
C1893	403 073 1200	CERAMIC 0.033U K 50V
C1895	403 069 1702	CERAMIC 1000P K 50V
C1896	403 073 1200	CERAMIC 0.033U K 50V
CN181	613 120 7899	SOCKET,8P
D1851	407 077 3109	DIODE SB0015-03A-BT
D1852	407 077 3109	DIODE SB0015-03A-BT
IC181	409 161 9806	IC LA7321
J1853	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1856	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1857	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1877	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1891	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1899	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
L1802	613 015 6204	COIL,INDUCTOR 100UHJ
OR	613 014 8254	HF CHOKE 100UH J
L1803	613 015 6181	COIL,INDUCTOR 68UHJ
OR	613 014 8230	HF CHOKE 68UH J
L1804	613 014 0838	COIL,INDUCTOR 6.8UHK
OR	613 014 4355	HF CHOKE 6.8UH K
L1805	613 014 0968	COIL,INDUCTOR 82UHK
OR	613 014 4485	HF CHOKE 82UH K
L1806	613 014 0890	COIL,INDUCTOR 22UHK
OR	613 014 4416	HF CHOKE 22UH K
L1851	613 014 0975	COIL,INDUCTOR 100UHK
OR	613 014 4492	HF CHOKE 100UH K
L1852	613 014 0951	COIL,INDUCTOR 68UHK
OR	613 014 4478	HF CHOKE 68UH K
L1855	613 015 6174	COIL,INDUCTOR 56UHJ
OR	613 014 8223	HF CHOKE 56UH J
L1856	613 015 6167	COIL,INDUCTOR 47UHJ
OR	613 014 8216	HF CHOKE 47UH J
Q1851	405 035 6100	TR 2SC2413K-T96-Q
OR	405 015 9701	TR 2SC2814-F4-TB
Q1852	405 002 0308	TR 2SA1037K-T96-R
OR	405 002 0407	TR 2SA1037K-T96-S
OR	405 002 6508	TR 2SA1179-M5-TB
OR	405 002 6706	TR 2SA1179-M6-TB
Q1853	405 035 6100	TR 2SC2413K-T96-Q
Q1853	405 015 9701	TR 2SC2814-F4-TB
Q1854	405 035 6100	TR 2SC2413K-T96-Q
OR	405 015 9701	TR 2SC2814-F4-TB
Q1855	405 014 4400	TR 2SC2412K-T96-Q
OR	405 014 4509	TR 2SC2412K-T96-R
OR	405 014 4608	TR 2SC2412K-T96-S
OR	405 015 8407	TR 2SC2812-L5-TB
OR	405 015 8704	TR 2SC2812-L6-TB
Q1891	405 029 3504	TR DTC144EK-T96
OR	405 018 1900	TR 2SC3395-TB
Q1892	405 029 3504	TR DTC144EK-T96
OR	405 018 1900	TR 2SC3395-TB
Q1893	405 029 3504	TR DTC144EK-T96
OR	405 018 1900	TR 2SC3395-TB
Q1894	405 029 3504	TR DTC144EK-T96
OR	405 018 1900	TR 2SC3395-TB
Q1895	405 029 3504	TR DTC144EK-T96
OR	405 018 1900	TR 2SC3395-TB
Q1896	405 029 3504	TR DTC144EK-T96
OR	405 018 1900	TR 2SC3395-TB
R1801	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R1802	401 038 8103	MT-GLAZE 6.8 JA 1/10W
R1803	401 038 0503	MT-GLAZE 22 JA 1/10W
R1804	401 038 0602	MT-GLAZE 220 JA 1/10W
R1805	401 037 6605	MT-GLAZE 120 JA 1/10W
R1806	401 038 2002	MT-GLAZE 270 JA 1/10W
R1807	401 038 7601	MT-GLAZE 560 JA 1/10W
R1808	401 038 6307	MT-GLAZE 470 JA 1/10W
R1851	401 038 6307	MT-GLAZE 470 JA 1/10W
R1852	401 038 0800	MT-GLAZE 22K JA 1/10W
R1853	401 038 0800	MT-GLAZE 22K JA 1/10W
R1854	401 038 5003	MT-GLAZE 390 JA 1/10W
R1855	401 038 5003	MT-GLAZE 390 JA 1/10W
R1856	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R1860	401 037 5202	MT-GLAZE 100 JA 1/10W
R1861	401 038 3603	MT-GLAZE 3.3K JA 1/10W
R1862	401 038 2200	MT-GLAZE 27K JA 1/10W
R1863	401 038 6307	MT-GLAZE 470 JA 1/10W
R1865	401 038 5003	MT-GLAZE 390 JA 1/10W
R1866	401 038 0107	MT-GLAZE 2K JA 1/10W
R1867	401 038 2200	MT-GLAZE 27K JA 1/10W
R1868	401 038 6307	MT-GLAZE 470 JA 1/10W
R1869	401 037 5400	MT-GLAZE 1K JA 1/10W
R1870	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R1873	401 038 9001	MT-GLAZE 680 JA 1/10W
R1874	401 038 0602	MT-GLAZE 220 JA 1/10W
R1891	401 038 0503	MT-GLAZE 22 JA 1/10W
R1892	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R1893	401 037 5608	MT-GLAZE 10K JA 1/10W
R1894	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R1895	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R1896	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R1897	401 038 6406	MT-GLAZE 4.7K JA 1/10W
VR181	613 002 0321	SEMI VR 470B
VR182	613 002 0345	SEMI VR 1KB

COMPL PCB,CP-2

COMPL.NO. 613 121 7164

SYSTEM CONTROL CIRCUIT(SY-B)

C3201	403 130 9408	NP-ELECT 10U M 25V
C3202	403 069 1207	CERAMIC 1000P K 50V
C3203	403 121 3408	ELECT 2.2U M 50V
C3204	403 002 2506	CERAMIC 0.01U M 25V
C3205	403 002 4807	CERAMIC 0.1U Z 25V

LOCATION	PARTS NO.	DESCRIPTION
D3201	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
IC321	409 114 4803	IC LB1641
Q3201	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
R3201	401 020 1907	CARBON 4.7K JA 1/4W
R3202	401 020 1907	CARBON 4.7K JA 1/4W
R3203	401 020 1907	CARBON 4.7K JA 1/4W
R3204	401 020 1907	CARBON 4.7K JA 1/4W
R3205	401 020 1907	CARBON 4.7K JA 1/4W
R3206	401 020 2805	CARBON 47K JA 1/4W
R3207	401 018 4804	CARBON 33K JA 1/4W
R3208	401 014 7106	CARBON 1.5M JA 1/4W
R3209	401 016 4707	CARBON 22K JA 1/4W
R3210	401 012 6903	CARBON 10K JA 1/4W
R3211	401 012 6903	CARBON 10K JA 1/4W
R3212	402 036 3701	FUSIBLE RES 3.3 JA 1/2W
OR	402 036 4401	FUSIBLE RES 3.3 JA 1/2W
R3213	401 022 7105	CARBON 750 JA 1/4W
R3216	401 012 6903	CARBON 10K JA 1/4W
R3218	401 016 0402	CARBON 200K JA 1/4W
R3219	401 016 0402	CARBON 200K JA 1/4W
R3220	401 012 6903	CARBON 10K JA 1/4W
R3221	401 012 6903	CARBON 10K JA 1/4W

SERVO CIRCUIT(SV-B)

LOCATION	PARTS NO.	DESCRIPTION
C3501	403 057 6801	POLYESTER 0.012U J 50V
C3502	403 135 4002	ELECT 47U M 6.3V
C3503	403 001 2606	CERAMIC 0.1U K 16V
C3504	403 071 6207	CERAMIC 220P K 50V
C3506	403 059 6502	POLYESTER 0.022U K 50V
C3507	403 070 9803	CERAMIC 0.015U K 50V
C3508	403 075 0706	CERAMIC 6800P K 50V
C3509	403 070 9803	CERAMIC 0.015U K 50V
C3510	403 145 8601	ELECT 22U M 16V
OR	403 042 8803	ELECT 22U M 16V
C3511	403 145 8601	ELECT 22U M 16V
OR	403 042 8803	ELECT 22U M 16V
C3512	403 063 0008	POLYESTER 6800P K 50V
C3513	403 168 6103	MT-POLYEST 0.1U J 50V
C3514	403 071 8102	CERAMIC 2200P K 50V
C3515	403 070 8806	CERAMIC 1500P K 50V
C3516	403 075 0706	CERAMIC 6800P K 50V
C3517	403 145 8601	ELECT 22U M 16V
OR	403 042 8803	ELECT 22U M 16V
C3518	403 145 8601	ELECT 22U M 16V
OR	403 042 8803	ELECT 22U M 16V
C3519	403 175 1009	MT-POLYEST 0.15U J 50V
C3520	403 135 4002	ELECT 47U M 6.3V
C3525	403 069 1702	CERAMIC 1000P K 50V
C3526	403 108 0000	ELECT 0.22U M 50V
C3527	403 069 5601	CERAMIC 0.01U K 50V
C3528	403 109 6308	ELECT 1U M 50V
C3529	403 119 6701	CERAMIC 0.068U K 16V
C3530	403 107 9905	ELECT 10U M 16V
C3531	403 135 7805	ELECT 3.3U M 50V
C3532	403 074 9502	CERAMIC 680P K 50V
C3533	403 069 1702	CERAMIC 1000P K 50V
C3534	403 159 0806	NP-ELECT 33U M 6.3V
C3535	403 069 1702	CERAMIC 1000P K 50V
C3536	403 061 3308	POLYESTER 0.039U J 50V
C3537	403 135 4002	ELECT 47U M 6.3V
C3540	403 063 7700	POLYESTER 0.082U K 50V

LOCATION	PARTS NO.	DESCRIPTION
C3550	403 068 0409	CERAMIC 0.1U Z 25V
C3551	403 168 6103	MT-POLYEST 0.1U J 50V
C3552	403 168 6103	MT-POLYEST 0.1U J 50V
C3553	403 168 6103	MT-POLYEST 0.1U J 50V
C3554	403 062 0405	POLYESTER 0.047U K 50V
C3555	403 069 5601	CERAMIC 0.01U K 50V
C3556	403 086 2607	NP-ELECT 1U M 50V
C3557	403 069 5601	CERAMIC 0.01U K 50V
C3558	403 086 2607	NP-ELECT 1U M 50V
C3601	403 031 9200	CERAMIC 7P D 50V
C3602	403 071 6207	CERAMIC 220P K 50V
C3603	403 002 1905	CERAMIC 0.01U K 25V
C3604	403 121 9509	CERAMIC 0.1U Z 50V
C3606	403 109 6308	ELECT 1U M 50V
CN351	613 120 9183	SOCKET,20P
CN352	613 120 9183	SOCKET,20P
D3501	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D3502	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D3503	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D3504	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D3506	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3509	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3512	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3513	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3517	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3520	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3527	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3528	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3529	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3530	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3535	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3536	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3539	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3540	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3541	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3601	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3602	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3603	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
IC351	409 180 3601	IC LC7418-8086
IC352	409 159 8606	IC LA7122S
OR	409 178 3200	IC LA7124
IC353	409 246 8304	IC LC9105-B-513
L3601	613 014 1088	COIL,INDUCTOR 10UHJ

LOCATION	PARTS NO.	DESCRIPTION
Q3501	405 014 4608	TR 2SC2412K-T96-S
OR	405 015 8902	TR 2SC2812-L7-TB
Q3502	405 003 7603	TR 2SA1345-AC
OR	405 000 2205	TR DTA144ES-DCTP
Q3503	405 014 4608	TR 2SC2412K-T96-S
OR	405 015 8902	TR 2SC2812-L7-TB
Q3504	405 018 1900	TR 2SC3395-TB
Q3505	405 015 8902	TR 2SC2812-L7-TB
OR	405 014 4608	TR 2SC2412K-T96-S
Q3506	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
Q3507	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
R3503	401 016 4707	CARBON 22K JA 1/4W
R3504	401 016 4707	CARBON 22K JA 1/4W
R3505	401 016 5704	CARBON 220K JA 1/4W
R3509	401 016 5704	CARBON 220K JA 1/4W
R3511	401 012 6903	CARBON 10K JA 1/4W
R3512	401 037 5707	MT-GLAZE 100K JA 1/10W
R3513	401 037 5707	MT-GLAZE 100K JA 1/10W
R3514	401 038 3801	MT-GLAZE 330K JA 1/10W
R3515	401 037 8005	MT-GLAZE 15K JA 1/10W
R3516	401 037 8104	MT-GLAZE 150K JA 1/10W
R3517	401 037 8104	MT-GLAZE 150K JA 1/10W
R3518	401 037 5608	MT-GLAZE 10K JA 1/10W
R3519	401 038 6505	MT-GLAZE 47K JA 1/10W
R3520	401 038 6505	MT-GLAZE 47K JA 1/10W
R3521	401 038 3801	MT-GLAZE 330K JA 1/10W
R3522	401 037 8104	MT-GLAZE 150K JA 1/10W
R3523	401 038 2200	MT-GLAZE 27K JA 1/10W
R3524	401 016 5704	CARBON 220K JA 1/4W
R3527	401 037 8104	MT-GLAZE 150K JA 1/10W
R3528	401 037 5707	MT-GLAZE 100K JA 1/10W
R3529	401 037 5608	MT-GLAZE 10K JA 1/10W
R3534	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R3535	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R3538	401 012 5609	CARBON 1K JA 1/4W
R3539	401 038 8806	MT-GLAZE 620K JA 1/10W
R3540	401 037 8104	MT-GLAZE 150K JA 1/10W
R3541	401 038 4006	MT-GLAZE 360 JA 1/10W
R3542	401 038 7106	MT-GLAZE 510 JA 1/10W
R3543	401 038 7106	MT-GLAZE 510 JA 1/10W
R3548	401 013 6308	CARBON 12K JA 1/4W
R3549	401 037 5707	MT-GLAZE 100K JA 1/10W
R3550	401 012 6903	CARBON 10K JA 1/4W
R3551	401 013 7206	CARBON 120K JA 1/4W
R3552	401 017 3709	CARBON 270K JA 1/4W
R3553	401 015 4609	CARBON 180K JA 1/4W
R3555	401 018 5702	CARBON 330K JA 1/4W
R3560	401 012 5609	CARBON 1K JA 1/4W
R3561	401 015 2605	CARBON 1.8K JA 1/4W
R3563	401 037 5400	MT-GLAZE 1K JA 1/10W
R3564	401 037 5400	MT-GLAZE 1K JA 1/10W
R3565	401 038 9902	MT-GLAZE 750K JA 1/10W
R3566	401 037 5707	MT-GLAZE 100K JA 1/10W
R3571	401 037 5707	MT-GLAZE 100K JA 1/10W
R3572	401 037 5608	MT-GLAZE 10K JA 1/10W
R3576	401 023 4509	CARBON 820K JA 1/4W
R3580	401 018 5702	CARBON 330K JA 1/4W
R3581	401 023 7807	CARBON 91K JA 1/4W
R3584	401 016 4707	CARBON 22K JA 1/4W
R3585	401 015 4609	CARBON 180K JA 1/4W
R3593	401 038 3801	MT-GLAZE 330K JA 1/10W
R3594	401 014 4006	CARBON 1.5K JA 1/4W
R3595	401 012 9201	CARBON 1M JA 1/4W
R3601	401 037 5400	MT-GLAZE 1K JA 1/10W
R3602	401 012 8006	CARBON 100K JA 1/4W
R3603	401 012 8006	CARBON 100K JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R3604	401 012 6903	CARBON 10K JA 1/4W
R3605	401 012 6903	CARBON 10K JA 1/4W

COMPL PCB,PW-1

COMPL.NO.	613 125 3254	(FVH-P1400S)
COMPL.NO.	613 123 0538	(FVH-P1400DK)
	613 041 5967	COVER
C5101	403 110 1705	ELECT 2200U M 25V
OR	403 148 0701	ELECT 2200U M 25V
C5102	403 110 1705	ELECT 2200U M 25V
OR	403 148 0701	ELECT 2200U M 25V
C5103	403 218 7203	ELECT 3900U M 16V (FVH-P1400S)
OR	403 160 6804	ELECT 3300U M 16V (FVH-P1400DK)
OR	403 158 0500	ELECT 3300U M 16V (FVH-P1400DK)
C5104	403 157 0006	ELECT 47U M 63V
C5105	403 195 5100	ELECT 47U M 100V
OR	403 155 5805	ELECT 47U M 100V
C5106	403 168 6202	MT-POLYEST 0.33U J 50V
C5107	403 135 9403	ELECT 47U M 35V
C5108	403 107 9905	ELECT 10U M 16V
C5109	403 107 9905	ELECT 10U M 16V
CN511	613 120 7905	SOCKET,12P
D5101	407 004 9600	DIODE DSF10TC-BT
D5102	407 004 9600	DIODE DSF10TC-BT
D5103	407 132 7400	DIODE GP30DL-6326
OR	407 145 5004	DIODE ERC01-02FL9
D5104	407 132 7400	DIODE GP30DL-6326
OR	407 145 5004	DIODE ERC01-02FL9
D5105	407 004 9709	DIODE DSK10C-BT
OR	407 088 6502	DIODE MPG06D-PKG3
OR	407 005 8701	DIODE ERA15-02-V5
D5106	407 004 9709	DIODE DSK10C-BT
OR	407 088 6502	DIODE MPG06D-PKG3
OR	407 005 8701	DIODE ERA15-02-V5
D5107	407 004 9709	DIODE DSK10C-BT
OR	407 088 6502	DIODE MPG06D-PKG3
OR	407 005 8701	DIODE ERA15-02-V5
D5108	407 004 9709	DIODE DSK10C-BT
OR	407 088 6502	DIODE MPG06D-PKG3
OR	407 005 8701	DIODE ERA15-02-V5
D5109	407 078 2705	DIODE 1SS244-T-77
D5110	407 078 2705	DIODE 1SS244-T-77
F5001 ⚠	423 004 6708	FUSE 250V0.315A
F5101 ⚠	423 004 3004	FUSE 250V 0.8A
F5102 ⚠	423 005 4901	FUSE 250V 1.6A
F5103 ⚠	423 006 1305	FUSE 250V 2A
F5104 ⚠	423 004 6708	FUSE 250V0.315A
R5101	401 007 8608	CARBON 1.5K JA 1/2W
R5102	401 007 8608	CARBON 1.5K JA 1/2W

COMPL PCB,PW-1

COMPL.NO.	613 124 5709	(FVH-P1440S)
⚠	613 041 8326	COVER
C5001	404 044 7900	MT-POLYEST 0.22U M 250V
C5002	404 044 7108	MT-POLYEST 0.047U M 250V
C5003	404 052 4304	ELECT 62U M 400V
C5004	403 183 3309	MT-POLYEST 0.047U M 630V
C5005	403 137 5007	CERAMIC 100P K 1K

LOCATION	PARTS NO.	DESCRIPTION
C5005	403 137 5007	CERAMIC 100P K 1K
C5007	403 155 3603	ELECT 1U M 400V
C5008	403 094 8806	OS-SOLID 2.2U M 25V
C5009	403 061 7702	POLYESTER 4700P J 50V
C5010	403 018 6208	CERAMIC 220P J 50V
OR	403 214 9706	CERAMIC 220P J 50V
C5011	403 001 5003	CERAMIC 2200P K 16V
C5014	403 058 9207	POLYESTER 0.018U J 50V
C5015	403 058 9207	POLYESTER 0.018U J 50V
C5020 ⚠	404 034 7507	CERAMIC 2200P M 400V
OR ⚠	404 032 6304	CERAMIC 2200P M 400V
C5021 ⚠	404 034 7507	CERAMIC 2200P M 400V
OR ⚠	404 032 6304	CERAMIC 2200P M 400V
C5022	404 034 7507	CERAMIC 2200P M 400V
OR	404 032 6304	CERAMIC 2200P M 400V
C5023	404 034 7507	CERAMIC 2200P M 400V
OR	404 032 6304	CERAMIC 2200P M 400V
C5101	403 176 2203	ELECT 1000U M 25V
C5102	403 199 5809	ELECT 470U M 16V
C5104	403 205 2105	ELECT 1200U M 16V
C5105	403 176 3507	ELECT 470U M 10V
C5106	403 154 8302	ELECT 47U M 50V
C5107	403 154 8302	ELECT 47U M 50V
C5108	403 155 5508	ELECT 330U M 6.3V
C5109	403 004 0500	CERAMIC 0.047U K 25V
C5110	403 003 4806	CERAMIC 0.027U K 25V
CN511	613 120 7905	SOCKET,12P
D5001 ⚠	407 010 9403	DIODE S1WBA60
OR ⚠	407 134 8900	DIODE DBC10G
D5003	407 091 6704	DIODE AP01C-V0
D5004	407 100 6909	DIODE AG01-V2
D5005	407 078 2705	DIODE 1SS244-T-77
D5006	407 050 9302	ZENER DIODE GZB18C
D5007	407 078 2705	DIODE 1SS244-T-77
D5008	407 078 2705	DIODE 1SS244-T-77
D5009	407 006 0902	DIODE ERB12-02
D5010	407 004 9808	DIODE DSK10E-BT
OR	407 005 9203	DIODE ERA15-04V5
D5011	407 097 0300	PHOTO COUPLE PC113A
D5101	407 100 9108	DIODE DLE30C-KC9
D5103	407 144 7108	DIODE ERB81-004L6
D5104	407 100 6909	DIODE AG01-V2
D5105	407 078 2705	DIODE 1SS244-T-77
D5106	407 078 2705	DIODE 1SS244-T-77
D5107	407 100 6909	DIODE AG01-V2
F5001 ⚠	423 006 1305	FUSE 250V 2A
IC511	409 067 7203	IC L5431-AA
L5002	636 026 2317	COIL,LINE FILTER
L5101	613 017 0354	CORE
L5102	613 110 4198	COIL,INDUCTOR 10UH K
Q5001	405 103 4106	TR 2SK1460-YA7
Q5002	405 017 9600	TR 2SC3330-T
Q5003	405 105 0700	TR 2SB1050-R
R5001 ⚠	401 001 8000	SOLID 2.7M MA 1/2W
OR ⚠	401 001 7904	SOLID 2.7M KA 1/2W
R5002 ⚠	401 080 0605	WIRE WOUND 2.2 KA 2W
R5003	401 069 4402	OXIDE-MT 68K JA 2W
R5004	401 165 7406	OXIDE-MT 240K JA 1W
R5005	401 069 4402	OXIDE-MT 68K JA 2W
R5007	401 009 5001	CARBON 33 JA 1/2W
R5008	401 007 0305	CARBON 100 JA 1/2W
R5009	401 012 8006	CARBON 100K JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R5010	401 012 4404	CARBON 100 JA 1/4W
R5011	401 011 8809	CARBON 1 JA 1/4W
R5012	401 016 1409	CARBON 22 JA 1/4W
R5013	401 012 6903	CARBON 10K JA 1/4W
R5014	401 017 2702	CARBON 27K JA 1/4W
R5015	401 057 5107	OXIDE-MT 0.47 JA 1W
R5016	401 090 1104	CARBON 1M JA 1/2W
R5101 ⚠	402 004 1005	FUSIBLE RES 2.7 JA 1/4W
R5103	401 013 5202	CARBON 1.2K JA 1/4W
R5104	401 016 3700	CARBON 2.2K JA 1/4W
R5105	401 107 6009	MT-FILM 1.6K FD 1/4W
R5106	401 180 7108	MT-FILM 2.05K FD 1/4W
R5107	401 012 4404	CARBON 100 JA 1/4W
R5108	401 012 6903	CARBON 10K JA 1/4W
T5001 ⚠	613 122 1086	TRANS,SW

COMPL PCB,PW-2

COMPL.NO.	613 120 6182	(FVH-P1400S,DK)
IC521	409 214 4208	IC STK5446

COMPL PCB,PW-2

COMPL.NO.	613 122 0812	(FVH-P1440S)
C5201	403 002 4708	CERAMIC 0.1U Z 25V
C5203	403 126 4509	ELECT 100U M 16V
C5204	403 156 1004	ELECT 47U M 16V
C5205	403 156 1004	ELECT 47U M 16V
D5201	407 125 9008	ZENER DIODE MTZJ2.0A-T-77
D5202	407 004 9709	DIODE DSK10C-BT
D5203	407 004 9709	DIODE DSK10C-BT
IC521	409 234 7005	IC SI-3120CA
PR521 ⚠	423 020 7604	FUSE 125V 2.5A
Q5201	405 019 1909	TR 2SC536-E-NP-AA
Q5202	405 022 7202	TR 2SD1666-S
R5201	401 017 1705	CARBON 2.7K JA 1/4W
R5202	401 017 1705	CARBON 2.7K JA 1/4W

COMPL PCB,PW-3

COMPL.NO.	613 120 6199	(FVH-P1400S,DK)
COMPL.NO.	613 122 0829	(FVH-P1440S)
CN531	613 120 7912	CONNECTOR,INLET

IF PACK

COMPL.NO.	613 108 3585	(EXCEPT FVH-P1400DK)
C6103	403 021 0200	CERAMIC 3P C 50V
C6104	403 021 0200	CERAMIC 3P C 50V
C6105	403 006 6203	CERAMIC 1P C 50V
C6106	403 006 6203	CERAMIC 1P C 50V
C6107	403 071 8102	CERAMIC 2200P K 50V
C6108	403 069 1702	CERAMIC 1000P K 50V
C6109	403 023 4404	CERAMIC 330P J 50V
C6110	403 071 8102	CERAMIC 2200P K 50V
C6113	403 075 0706	CERAMIC 6800P K 50V
C6114	403 034 1409	CERAMIC 9P C 50V
C6115	403 070 9803	CERAMIC 0.015U K 50V
C6116	403 049 1005	ELECT 1U M 50V
C6117	403 069 1702	CERAMIC 1000P K 50V
C6119	403 075 0706	CERAMIC 6800P K 50V
C6120	403 053 9707	ELECT 4.7U M 35V
C6121	403 075 5305	CERAMIC 8200P K 50V

LOCATION	PARTS NO.	DESCRIPTION
C6122	403 041 9603	ELECT 10U M 16V
C6123	403 075 0706	CERAMIC 6800P K 50V
C6124	403 069 5601	CERAMIC 0.01U K 50V
C6125	403 033 4500	CERAMIC 82P J 50V
C6127	403 022 8205	CERAMIC 33P J 50V
C6128	403 075 0706	CERAMIC 6800P K 50V
C6129	403 043 9700	ELECT 47U M 16V
C6130	403 013 7903	CERAMIC 16P J 50V
C6133	403 014 3409	CERAMIC 18P J 50V
C6134	403 026 2803	CERAMIC 47P J 50V
C6137	403 033 4708	CERAMIC 82P J 50V
C6138	403 075 0706	CERAMIC 6800P K 50V
C6139	403 047 9201	ELECT 0.1U M 50V
C6141	403 069 5601	CERAMIC 0.01U K 50V
C6142	403 075 0706	CERAMIC 6800P K 50V
C6143	403 012 6808	CERAMIC 15P J 50V
IC611	409 019 3307	IC LA7530N
L6102	613 014 0746	COIL,INDUCTOR 1.2UHM
L6103	613 098 8393	COIL,CHOKE 1.2UH
L6105	613 014 0869	COIL,INDUCTOR 12UHK
L6106	613 014 0852	COIL,INDUCTOR 10UHK
L6107	613 014 0869	COIL,INDUCTOR 12UHK
L6108	613 014 0913	COIL,INDUCTOR 33UHK
L6109	613 014 0845	COIL,INDUCTOR 8.2UHK
Q6101	405 015 5505	TR 2SC2757-T1B-T33
Q6102	405 002 0209	TR 2SA1037K-Q
Q6103	405 021 2406	TR 2SD1048-X7-TB
R6101	401 037 7206	MT-GLAZE 130 JA 1/10W
R6102	401 014 2804	CARBON 150 JA 1/4W
R6103	401 038 0602	MT-GLAZE 220 JA 1/10W
R6104	401 037 7800	MT-GLAZE 150 JA 1/10W
R6105	401 039 0205	MT-GLAZE 82 JA 1/10W
R6106	401 038 9704	MT-GLAZE 7.5K JA 1/10W
R6107	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R6108	401 037 5400	MT-GLAZE 1K JA 1/10W
R6109	401 038 0503	MT-GLAZE 22 JA 1/10W
R6110	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R6111	401 038 6307	MT-GLAZE 470 JA 1/10W
R6112	401 038 2002	MT-GLAZE 270 JA 1/10W
R6113	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R6114	401 038 7205	MT-GLAZE 5.1K JA 1/10W
R6115	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R6116	401 038 0800	MT-GLAZE 22K JA 1/10W
R6117	401 012 5609	CARBON 1K JA 1/4W
R6118	401 038 4105	MT-GLAZE 3.6K JA 1/10W
R6119	401 037 5400	MT-GLAZE 1K JA 1/10W
R6120	401 037 7305	MT-GLAZE 1.3K JA 1/10W
R6121	401 038 2002	MT-GLAZE 270 JA 1/10W
R6124	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R6126	401 037 7800	MT-GLAZE 150 JA 1/10W
R6128	401 037 5202	MT-GLAZE 100 JA 1/10W
R6129	401 038 3603	MT-GLAZE 3.3K JA 1/10W
R6130	401 037 5202	MT-GLAZE 100 JA 1/10W
R6132	401 038 7809	MT-GLAZE 56K JA 1/10W
R6133	401 037 5400	MT-GLAZE 1K JA 1/10W
R6134	401 017 9206	CARBON 3K JA 1/4W
R6135	401 038 9308	MT-GLAZE 68K JA 1/10W
R6136	401 038 0008	MT-GLAZE 200 JA 1/10W
R6137	401 037 8500	MT-GLAZE 160 JA 1/10W
R6138	401 037 7800	MT-GLAZE 150 JA 1/10W
T6101	613 098 8355	TRANS,IF
T6102	613 098 8362	TRANS,IF
T6103	613 098 8379	TRANS,IF
T6104	613 098 8386	TRANS,IF

LOCATION	PARTS NO.	DESCRIPTION
VR611	613 001 9035	SEMI VR 10KB
XF611	421 002 9509	SAW F TSF1338L
XF612	613 084 1728	FILTER
XF613	613 110 1050	FILTER
XF614	613 084 1674	FILTER
XF615	613 098 8317	DISCR,CERAMIC 5.74M

IF PACK

COMPL.NO.	613 092 7811	(FVH-P1400DK ONLY)
C6103	403 033 4708	CERAMIC 82P J 50V
C6104	403 069 9500	CERAMIC 0.01U Z 50V
C6105	403 069 9500	CERAMIC 0.01U Z 50V
C6106	403 069 9500	CERAMIC 0.01U Z 50V
C6107	403 069 9500	CERAMIC 0.01U Z 50V
C6108	403 069 9500	CERAMIC 0.01U Z 50V
C6111	403 068 0409	CERAMIC 0.1U Z 25V
C6112	403 069 1702	CERAMIC 1000P K 50V
C6113	403 050 0509	ELECT 2.2U M 50V
C6114	403 069 9500	CERAMIC 0.01U Z 50V
C6116	403 069 9500	CERAMIC 0.01U Z 50V
C6117	403 048 4809	ELECT 0.33U M 50V
C6118	403 069 9500	CERAMIC 0.01U Z 50V
C6119	403 069 9500	CERAMIC 0.01U Z 50V
C6120	403 068 0409	CERAMIC 0.1U Z 25V
C6124	403 042 3006	ELECT 100U M 16V
C6125	403 072 3403	CERAMIC 0.022U Z 50V
C6126	403 073 0005	CERAMIC 3300P K 50V
C6127	403 072 8507	CERAMIC 330P K 50V
C6129	403 008 4009	CERAMIC 10P C 50V
C6130	403 069 9500	CERAMIC 0.01U Z 50V
C6131	403 009 5708	CERAMIC 100P J 50V
C6136	403 014 3409	CERAMIC 18P J 50V
C6137	403 034 6701	CERAMIC 91P J 50V
C6138	403 048 6902	ELECT 0.47U M 50V
C6139	403 022 8403	CERAMIC 33P J 50V
C6140	403 049 0800	ELECT 1U M 50V
C6141	403 012 7003	CERAMIC 15P J 50V
C6142	403 069 5601	CERAMIC 0.01U K 50V
C6143	403 069 5601	CERAMIC 0.01U K 50V
C6144	403 047 0604	ELECT 4.7U M 25V
C6153	403 020 0409	CERAMIC 27P J 50V
C6155	403 069 9500	CERAMIC 0.01U Z 50V
D6101	407 053 8906	ZENER DIODE MTZ9.1C-T-77
D6102	407 103 5305	DIODE 1SS318-TT51
IC611	409 036 0105	IC M51366SP
J6107	401 035 4108	MT-GLAZE 0.000 ZA 1/8W
J6109	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6112	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6113	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6114	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6115	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
L6108	613 014 0838	COIL,INDUCTOR 6.8UHK
L6110	613 098 6047	COIL,CHOKE 1.5UH
L6111	613 014 0708	COIL,INDUCTOR 0.56UHM
L6115	613 014 0869	COIL,INDUCTOR 12UHK
Q6101	405 090 3304	TR 2SC3838K-ADP-T96
Q6102	405 004 3901	TR 2SA608-E-NP
Q6103	405 090 3304	TR 2SC3838K-ADP-T96
Q6104	405 015 9909	TR 2SC2814-F5-TB
Q6106	405 015 8407	TR 2SC2812-L5-TB
R6101	402 023 4506	FUSIBLE RES 27 JA 1/2W

LOCATION	PARTS NO.	DESCRIPTION
R6102	401 037 5400	MT-GLAZE 1K JA 1/10W
R6103	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R6104	401 037 5400	MT-GLAZE 1K JA 1/10W
R6105	401 038 0503	MT-GLAZE 22 JA 1/10W
R6106	401 035 4603	MT-GLAZE 100 JA 1/8W
R6107	401 038 0602	MT-GLAZE 220 JA 1/10W
R6109	401 038 3603	MT-GLAZE 3.3K JA 1/10W
R6110	401 038 3801	MT-GLAZE 330K JA 1/10W
R6111	401 037 9309	MT-GLAZE 18K JA 1/10W
R6112	401 038 3801	MT-GLAZE 330K JA 1/10W
R6113	401 038 7809	MT-GLAZE 56K JA 1/10W
R6114	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R6115	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R6116	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R6117	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R6119	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R6120	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R6121	401 039 0601	MT-GLAZE 820K JA 1/10W
R6122	401 038 3603	MT-GLAZE 3.3K JA 1/10W
R6123	401 037 5608	MT-GLAZE 10K JA 1/10W
R6124	401 039 0403	MT-GLAZE 8.2K JA 1/10W
R6125	401 038 3504	MT-GLAZE 330 JA 1/10W
R6126	401 037 5400	MT-GLAZE 1K JA 1/10W
R6127	401 036 8105	MT-GLAZE 470 JA 1/8W
R6128	401 038 8905	MT-GLAZE 68 JA 1/10W
R6129	401 037 5202	MT-GLAZE 100 JA 1/10W
R6130	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R6131	401 037 3703	MT-GLAZE 820 JA 1/8W
R6132	401 037 5707	MT-GLAZE 100K JA 1/10W
R6133	401 037 5707	MT-GLAZE 100K JA 1/10W
R6134	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R6135	401 037 5202	MT-GLAZE 100 JA 1/10W
R6136	401 038 3504	MT-GLAZE 330 JA 1/10W
R6137	401 038 3603	MT-GLAZE 3.3K JA 1/10W
R6138	401 038 9001	MT-GLAZE 680 JA 1/10W
R6145	401 039 0304	MT-GLAZE 820 JA 1/10W
R6146	401 038 6208	MT-GLAZE 47 JA 1/10W
R6147	401 038 6505	MT-GLAZE 47K JA 1/10W
R6148	401 039 0304	MT-GLAZE 820 JA 1/10W
R6149	401 037 9101	MT-GLAZE 180 JA 1/10W
R6152	401 037 5400	MT-GLAZE 1K JA 1/10W
R6153	401 038 5003	MT-GLAZE 390 JA 1/10W
R6154	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R6155	401 038 6307	MT-GLAZE 470 JA 1/10W
R6157	401 036 1601	MT-GLAZE 2.2K JA 1/8W
R6158	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R6160	401 037 5400	MT-GLAZE 1K JA 1/10W
R6166	401 098 7603	MT-GLAZE 2.2 JA 1/10W
R6176	401 038 7502	MT-GLAZE 56 JA 1/10W
VR611	613 002 1137	SEMI VR 1KB
X6101	421 002 6409	SAW F TSF1321L
X6104	613 082 9382	FILTER
X6105	613 088 8372	FILTER,5.85M
X6106	613 091 7652	FILTER,5.5MHZ
X6108	613 091 0868	FILTER
OR	613 130 0651	FILTER,6.5MHZ B.P.F
X6111	613 098 5071	DISCR,CERAMIC 6.5MC29
OR	613 130 7377	DISCR,CERAMIC
X6113	613 084 1704	FILTER
OR	613 130 0644	FILTER,5.5MHZ B.P.F
X6114	613 091 0868	FILTER
OR	613 130 0651	FILTER,6.5MHZ B.P.F
X6115	613 002 8570	CRYSTAL

LOCATION	PARTS NO.	DESCRIPTION
COMPL PCB,TN-7		
COMPL.NO.	613 127 8035	(EXCEPT FVH-P1400DK)
COMPL.NO.	613 127 8028	(FVH-P1400DK)
B6901	405 018 1900	TR 2SC3395-TB
OR	405 029 3504	TR DTC144EK-T96
C6901	403 068 0409	CERAMIC 0.1U Z 25V
OR	403 116 2508	CERAMIC 0.1U Z 25V
C6902	403 189 2405	ELECT 10U M 16V
C6903	403 072 3403	CERAMIC 0.022U Z 50V
C6904	403 193 8400	ELECT 0.22U M 50V
C6921	403 068 0409	CERAMIC 0.1U Z 25V
OR	403 116 2508	CERAMIC 0.1U Z 25V
C6922	403 014 9203	CERAMIC 180P J 50V (FVH-P1400DK ONLY)
C6923	403 069 1702	CERAMIC 1000P K 50V (FVH-P1400DK ONLY)
C6924	403 067 7300	MT-COMPO 0.33U J 50V (FVH-P1400DK ONLY)
OR	403 115 1007	MT-POLYEST 0.33U J 63V (FVH-P1400DK ONLY)
OR	403 168 6202	MT-POLYEST 0.33U J 50V (FVH-P1400DK ONLY)
C6925	403 067 6709	MT-COMPO 0.22U J 50V (FVH-P1400DK ONLY)
OR	403 065 8101	MT-POLYEST 0.22U J 63V (FVH-P1400DK ONLY)
OR	403 184 9805	MT-POLYEST 0.22U J 50V (FVH-P1400DK ONLY)
D6901	407 004 0706	DIODE DCB015-TB
OR	407 003 3609	DIODE DAN202K-T-96
D6902	407 003 5108	DIODE DA204K-T96
IC691	409 019 6209	IC LA7910(FVH-P1400DK ONLY)
J6901	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
Q6901	405 015 8308	TR 2SC2812-L4-TB
OR	405 015 8407	TR 2SC2812-L5-TB
OR	405 014 4400	TR 2SC2412K-T96-Q
OR	405 014 4509	TR 2SC2412K-T96-R
OR	405 015 8704	TR 2SC2812-L6-TB
Q6902	405 030 7201	TR 2SA1338-4-TB
OR	405 030 7300	TR 2SA1338-5-TB
Q6903	405 015 8308	TR 2SC2812-L4-TB
OR	405 015 8407	TR 2SC2812-L5-TB
OR	405 014 4400	TR 2SC2412K-T96-Q
OR	405 014 4509	TR 2SC2412K-T96-R
OR	405 015 8704	TR 2SC2812-L6-TB
Q6921	405 084 8209	TR 2SC2960-F-SPA-AC (FVH-P1400DK ONLY)
OR	405 084 8308	TR 2SC2960-G-SPA-AC (FVH-P1400DK ONLY)
R6901	401 037 5400	MT-GLAZE 1K JA 1/10W
R6902	401 038 3504	MT-GLAZE 330 JA 1/10W
R6903	401 038 8509	MT-GLAZE 620 JA 1/10W
R6904	401 037 5608	MT-GLAZE 10K JA 1/10W
R6905	401 038 3801	MT-GLAZE 330K JA 1/10W
R6906	401 037 5608	MT-GLAZE 10K JA 1/10W
R6907	401 038 3603	MT-GLAZE 3.3K JA 1/10W
R6908	401 039 0205	MT-GLAZE 82 JA 1/10W
R6909	401 037 5400	MT-GLAZE 1K JA 1/10W
R6910	401 038 7106	MT-GLAZE 510 JA 1/10W
R6911	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R6912	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R6921	401 038 5102	MT-GLAZE 3.9K JA 1/10W (FVH-P1400DK ONLY)

LOCATION	PARTS NO.	DESCRIPTION
R6922	401 038 3702	MT-GLAZE 33K JA 1/10W (FVH-P1400DK ONLY)
R6923	401 037 5608	MT-GLAZE 10K JA 1/10W (FVH-P1400DK ONLY)
R6924	401 037 5608	MT-GLAZE 10K JA 1/10W (FVH-P1400DK ONLY)
R6925	401 037 9309	MT-GLAZE 18K JA 1/10W (FVH-P1400DK ONLY)
R6926	401 037 8005	MT-GLAZE 15K JA 1/10W (FVH-P1400DK ONLY)
R6927	401 037 6803	MT-GLAZE 12K JA 1/10W (FVH-P1400DK ONLY)
T6901	613 109 0958	TRANS,IF
OR	613 109 0965	TRANS,IF

COMPL PCB,TM-1

LOCATION	PARTS NO.	DESCRIPTION
COMPL.NO.	613 125 3186	(FVH-P1400S)
COMPL.NO.	613 124 7833	(FVH-P1440S)
COMPL.NO.	613 125 3193	(FVH-P1400DK)
	613 121 6617	HOLDER,DIGITRON
A7001	613 113 2672	FLUORESCENT TUBE
C7001	403 155 2804	DL-ELECT 0.047F Z 5.5V
OR	403 212 9104	DL-ELECT 0.1F Z 5.5V
D7001	407 120 5807	DIODE AK04-V2(FVH-P1400S,DK)
D7006	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D7007	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D7009	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D7010	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D7011	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D7013	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D7025	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D7028	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D7032	407 007 9904	DIODE GMA01-BT(EXCEPT FVH-P1400DK)
OR	407 012 4406	DIODE 1SS133-T-77 (EXCEPT FVH-P1400DK)
D7034	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D7035	407 007 9904	DIODE GMA01-BT(FVH-P1400S,DK)
OR	407 012 4406	DIODE 1SS133-T-77(FVH-P1400S,DK)
R7001	401 012 5609	CARBON 1K JA 1/4W
R7002	401 012 5609	CARBON 1K JA 1/4W
R7003	401 012 5609	CARBON 1K JA 1/4W
R7004	401 012 5609	CARBON 1K JA 1/4W
R7005	401 012 5609	CARBON 1K JA 1/4W
RR701	613 122 9198	IR RECEIVER PACK UNIT
S7001	613 006 3649	PUSH SWITCH,REW
OR	613 079 4130	SW,PUSH,REW
OR	613 092 1734	SW,PUSH,REW
OR	613 092 0751	SW,PUSH,REW
S7002	613 006 3649	PUSH SWITCH,FF
OR	613 079 4130	SW,PUSH,FF
OR	613 092 1734	SW,PUSH,FF
OR	613 092 0751	SW,PUSH,FF
S7005	613 006 3649	PUSH SWITCH,CH UP
OR	613 079 4130	SW,PUSH,CH UP
OR	613 092 1734	SW,PUSH,CH UP
OR	613 092 0751	SW,PUSH,CH UP
S7006	613 079 4130	SW,PUSH,TR+
OR	613 092 1734	SW,PUSH,TR+
OR	613 092 0751	SW,PUSH,TR+
OR	613 006 3649	PUSH SWITCH,TR+
S7011	613 006 3649	PUSH SWITCH,PLAY
OR	613 079 4130	SW,PUSH,PLAY
OR	613 092 1734	SW,PUSH,PLAY
OR	613 092 0751	SW,PUSH,PLAY
S7012	613 006 3649	PUSH SWITCH,STOP
OR	613 079 4130	SW,PUSH,STOP
OR	613 092 1734	SW,PUSH,STOP
OR	613 092 0751	SW,PUSH,STOP
S7015	613 006 3649	PUSH SWITCH,CH DOWN
OR	613 079 4130	SW,PUSH,CH DOWN
OR	613 092 1734	SW,PUSH,CH DOWN
OR	613 092 0751	SW,PUSH,CH DOWN
S7016	613 006 3649	PUSH SWITCH,TR-
OR	613 079 4130	SW,PUSH,TR-
OR	613 092 1734	SW,PUSH,TR-
OR	613 092 0751	SW,PUSH,TR-
S7018	613 006 3649	PUSH SWITCH,S.T.ADJ
OR	613 079 4130	SW,PUSH,S.T.ADJ
OR	613 092 1734	SW,PUSH,S.T.ADJ
OR	613 092 0751	SW,PUSH,S.T.ADJ
S7021	613 006 3649	PUSH SWITCH,REC
OR	613 079 4130	SW,PUSH,REC
OR	613 092 1734	SW,PUSH,REC
OR	613 092 0751	SW,PUSH,REC
S7022	613 006 3649	PUSH SWITCH,P/S
OR	613 079 4130	SW,PUSH,P/S
OR	613 092 1734	SW,PUSH,P/S
OR	613 092 0751	SW,PUSH,P/S
S7024	613 006 3649	PUSH SWITCH,PRESET
OR	613 079 4130	SW,PUSH,PRESET
OR	613 092 1734	SW,PUSH,PRESET
OR	613 092 0751	SW,PUSH,PRESET
S7025	613 006 3649	PUSH SWITCH,OK
OR	613 079 4130	SW,PUSH,OK
OR	613 092 1734	SW,PUSH,OK
OR	613 092 0751	SW,PUSH,OK
S7026	613 006 3649	PUSH SWITCH,DIMMER
OR	613 079 4130	SW,PUSH,DIMMER
OR	613 092 1734	SW,PUSH,DIMMER
OR	613 092 0751	SW,PUSH,DIMMER
S7032	613 006 3649	PUSH SWITCH,POWER
OR	613 079 4130	SW,PUSH,POWER
OR	613 092 1734	SW,PUSH,POWER
OR	613 092 0751	SW,PUSH,POWER
S7050	613 081 0922	SLIDE SWITCH 1-2,AV INPUT
S7051	613 006 3649	PUSH SWITCH,ALL CLEAR
OR	613 079 4130	SW,PUSH,ALL CLEAR
OR	613 092 1734	SW,PUSH,ALL CLEAR
OR	613 092 0751	SW,PUSH,ALL CLEAR
VR701	613 091 5450	VR,ROTARY 10KB

COMPL PCB,TM-2

LOCATION	PARTS NO.	DESCRIPTION
COMPL.NO.	613 123 2358	
S7102	613 006 3649	PUSH SWITCH,EJECT
OR	613 079 4130	SW,PUSH,EJECT
OR	613 092 1734	SW,PUSH,EJECT
OR	613 092 0751	SW,PUSH,EJECT

COMPL PCB,TM-5

LOCATION	PARTS NO.	DESCRIPTION
COMPL.NO.	613 120 7660	(FVH-P1400S,DK)
C7501	403 068 0409	CERAMIC 0.1U Z 25V
C7502	403 139 0703	ELECT 100U M 6.3V
C7504	403 139 3001	ELECT 3.3U M 50V
C7505	403 022 8304	CERAMIC 33P J 50V
C7506	403 022 8304	CERAMIC 33P J 50V
C7509	403 068 0409	CERAMIC 0.1U Z 25V
C7510	403 069 5601	CERAMIC 0.01U K 50V
C7511	403 008 7505	CERAMIC 10P D 50V
C7512	403 010 8606	CERAMIC 12P J 50V
C7513	403 118 0106	NP-ELECT 10U M 16V
C7514	403 026 2803	CERAMIC 47P J 50V
C7515	403 026 2803	CERAMIC 47P J 50V
C7517	403 008 7406	CERAMIC 10P D 50V
D7501	407 004 0201	DIODE DCA015-TB
OR	407 003 4507	DIODE DAP202K-T-96
IC751	409 238 3300	IC M50556-001SP
L7501	613 015 6105	COIL,INDUCTOR 15UHJ
OR	613 014 8155	HF CHOKE 15UH J
L7502	613 015 6129	COIL,INDUCTOR 22UHJ
OR	613 014 8179	HF CHOKE 22UH J
Q7501	405 002 6508	TR 2SA1179-M5-TB
OR	405 002 6706	TR 2SA1179-M6-TB
Q7502	405 000 2908	TR DTC114EK-T96
OR	405 018 2402	TR 2SC3398-TB
R7501	401 037 5400	MT-GLAZE 1K JA 1/10W
R7502	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R7503	401 037 5400	MT-GLAZE 1K JA 1/10W
R7504	401 037 8609	MT-GLAZE 1.6K JA 1/10W
R7505	401 037 5400	MT-GLAZE 1K JA 1/10W
R7506	401 038 9704	MT-GLAZE 7.5K JA 1/10W
R7507	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R7508	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R7509	401 037 5608	MT-GLAZE 10K JA 1/10W
R7510	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R7513	401 037 5707	MT-GLAZE 100K JA 1/10W
R7514	401 037 5806	MT-GLAZE 1M JA 1/10W
R7515	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R7520	401 037 5400	MT-GLAZE 1K JA 1/10W
X7501	613 002 8709	CRYSTAL 17.734475MHZ
OR	613 127 1555	OSC,CRYSTAL 17.734475MHZ

COMPL PCB,TM-6

LOCATION	PARTS NO.	DESCRIPTION
COMPL.NO.	613 129 6121	(FVH-P1440S,SPAIN)
COMPL.NO.	613 122 1321	(FVH-P1440S,EUROPE)
B7601	405 018 2402	TR 2SC3398-TB
C7601	403 155 2804	DL-ELECT 0.047F Z 5.5V
C7602	403 041 2703	ELECT 47U M 10V
C7603	403 039 3507	ELECT 470U M 6.3V
C7604	403 069 9500	CERAMIC 0.01U Z 50V
C7605	403 069 9500	CERAMIC 0.01U Z 50V
C7606	403 069 9500	CERAMIC 0.01U Z 50V
C7609	403 041 9405	ELECT 10U M 16V
C7610	403 069 9500	CERAMIC 0.01U Z 50V
C7611	403 069 9500	CERAMIC 0.01U Z 50V
C7625	403 041 2109	ELECT 47U M 10V
C7640	403 012 6808	CERAMIC 15P J 50V
C7642	403 069 9500	CERAMIC 0.01U Z 50V
C7643	403 069 9500	CERAMIC 0.01U Z 50V
C7644	403 049 0800	ELECT 1U M 50V
C7646	403 043 9106	ELECT 47U M 16V
C7651	403 161 6902	NP-ELECT 2.2U M 50V
C7652	403 012 6907	CERAMIC 15P J 50V
C7653	403 069 1702	CERAMIC 1000P K 50V
C7654	403 026 7600	CERAMIC 470P J 50V
C7655	403 072 1607	CERAMIC 0.022U K 50V
C7656	403 020 5602	CERAMIC 270P J 50V
C7657	403 009 5807	CERAMIC 100P J 50V
C7658	403 012 6907	CERAMIC 15P J 50V
C7659	403 020 0508	CERAMIC 27P J 50V
C7660	403 067 7300	MT-COMPO 0.33U J 50V
C7661	403 068 3202	CERAMIC 0.033U K 25V
C7662	403 049 0800	ELECT 1U M 50V
C7663	403 041 9405	ELECT 10U M 16V
C7664	403 073 1200	CERAMIC 0.033U K 50V
C7665	403 014 3508	CERAMIC 18P J 50V
C7666	403 018 0602	CERAMIC 22P J 50V
C7667	403 018 7502	CERAMIC 220P J 50V
C7668	403 130 4106	CERAMIC 0.068U K 25V
OR	403 228 7408	CERAMIC 0.068U K 25V
C7669	403 043 9601	ELECT 47U M 16V
C7670	403 069 9500	CERAMIC 0.01U Z 50V
C7671	403 069 9500	CERAMIC 0.01U Z 50V
C7672	403 041 2703	ELECT 47U M 10V
C7673	403 069 9500	CERAMIC 0.01U Z 50V
C7674	403 042 8308	ELECT 22U M 16V
C7675	403 042 8308	ELECT 22U M 16V
C7676	403 042 8308	ELECT 22U M 16V
C7677	403 072 1607	CERAMIC 0.022U K 50V
C7678	403 026 2902	CERAMIC 47P J 50V
C7679	403 069 1702	CERAMIC 1000P K 50V
C7680	403 049 0800	ELECT 1U M 50V
C7681	403 068 0409	CERAMIC 0.1U Z 25V
C7682	403 093 8302	OS-SOLID 47U M 10V
C7683	403 069 9500	CERAMIC 0.01U Z 50V
C7684	403 068 0409	CERAMIC 0.1U Z 25V
C7685	403 049 0800	ELECT 1U M 50V
C7686	403 069 5601	CERAMIC 0.01U K 50V
C7687	403 069 1702	CERAMIC 1000P K 50V
C7688	403 049 0800	ELECT 1U M 50V
C7689	403 086 0108	NP-ELECT 4.7U M 25V
C7691	403 049 0800	ELECT 1U M 50V
C7692	403 042 3006	ELECT 100U M 16V
C7693	403 042 3006	ELECT 100U M 16V
C7694	403 042 3006	ELECT 100U M 16V
C7695	403 068 0409	CERAMIC 0.1U Z 25V
C7696	403 074 3104	CERAMIC 0.047U Z 50V
C7698	403 073 9107	CERAMIC 4700P K 50V
C7699	403 206 8601	CERAMIC 0.33U Z 16V
CT761	613 002 6545	TRIMMER
D7602	407 120 5807	DIODE AK04-V2
D7603	407 004 0201	DIODE DCA015-TB
OR	407 003 4507	DIODE DAP202K-T-96
D7657	407 004 0201	DIODE DCA015-TB
OR	407 003 4507	DIODE DAP202K-T-96
D7659	407 004 0201	DIODE DCA015-TB
OR	407 003 4507	DIODE DAP202K-T-96
D7660	407 004 0201	DIODE DCA015-TB
OR	407 003 4507	DIODE DAP202K-T-96
IC761	409 120 6402	IC 8031AH
IC762	410 126 0905	IC TMS27PC512-20N.S17 (FVH-P1440S,SPAIN)
OR	410 126 0707	IC TMS27PC512-20N.S15 (FVH-P1440S,EUROPE)
IC763	409 194 6100	IC SRM2264LC-10

LOCATION	PARTS NO.	DESCRIPTION
Q8601	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 093 0607	TR KSC2785-Y
Q8602	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
R8501	401 019 2908	CARBON 39K JA 1/4W
R8503	401 017 9701	CARBON 30K JA 1/4W
R8505	401 019 2908	CARBON 39K JA 1/4W
R8511	401 018 4804	CARBON 33K JA 1/4W
R8512	401 012 5609	CARBON 1K JA 1/4W
R8531	401 015 1509	CARBON 180 JA 1/4W
R8601	401 012 6903	CARBON 10K JA 1/4W
R8602	401 020 1907	CARBON 4.7K JA 1/4W
R8603	401 022 6702	CARBON 75 JA 1/4W
R8604	401 012 5609	CARBON 1K JA 1/4W
R8605	401 022 6702	CARBON 75 JA 1/4W
R8606	401 012 5609	CARBON 1K JA 1/4W
R8607	401 020 1907	CARBON 4.7K JA 1/4W

COMPL PCB,TB-3

COMPL.NO. 613 121 7218

LOCATION	PARTS NO.	DESCRIPTION
	613 122 9181	BLIND
C8851	403 069 1207	CERAMIC 1000P K 50V
JK881	613 121 8147	JACK,RCA 2P
R8851	401 012 5609	CARBON 1K JA 1/4W

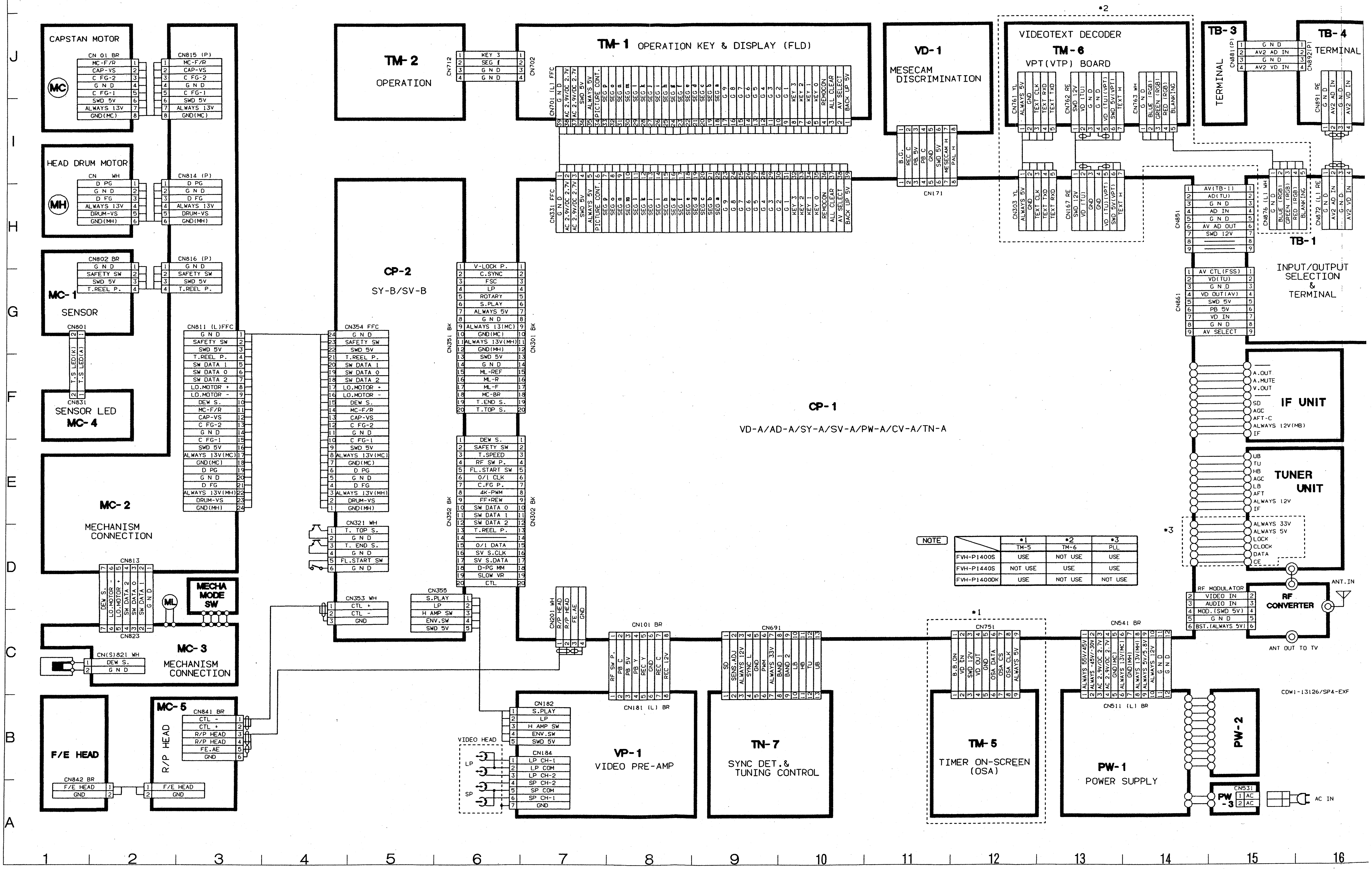
ACCESSORIES

LOCATION	PARTS NO.	DESCRIPTION
	613 125 4299	REMOCON(FVH-P1400S,DK)
OR	613 124 0476	REMOCON(FVH-P1440S)
	613 127 1593	INSTRUCTION MANUAL (FVH-P1400S,EUROPE)
OR	613 128 5262	INSTRUCTION MANUAL (FVH-P1400S,SPAIN)
OR	613 128 5279	INSTRUCTION MANUAL (FVH-P1440S,SPAIN)
OR	613 124 8267	INSTRUCTION MANUAL (FVH-P1440S,EUROPE)
OR	613 125 4596	INSTRUCTION MANUAL(FVH-P1400DK)
	613 126 5578	INSTRUCTION MANUAL,VPT (FVH-P1440S,SPAIN)
OR	613 126 5127	INSTRUCTION MANUAL,VPT(FVH-P1440S)
	613 124 3668	CAUTION SHEET,DEW
	613 129 1812	CAUTION SHEET(FVH-P1400S,SPAIN)
OR	613 129 1829	CAUTION SHEET(FVH-P1440S,SPAIN)
	613 096 6773	CABLE,ANT
OR	613 011 7359	CABLE,ANT
	613 095 0550	CORD,POWER

PACKING MATERIALS

LOCATION	PARTS NO.	DESCRIPTION
	613 127 1562	CORR CASE,INNER(FVH-P1400S,EUROPE)
OR	613 128 5125	CORR CASE,INNER(FVH-P1400S,SPAIN)
OR	613 128 5132	CORR CASE,INNER(FVH-P1440S,SPAIN)
OR	613 124 8168	CORR CASE,INNER(FVH-P1440S,EUROPE)
OR	613 125 4985	CORR CASE,INNER(FVH-P1400DK)
	613 127 1586	CUSHION,INNER,RIGHT
	613 127 1579	CUSHION,INNER,LEFT
	613 099 1768	POLYE COVER,INNER-K(FVH-P1400S,DK)
OR	613 095 1229	POLYE COVER,INNER(FVH-P1440S)
	613 107 8970	BAR CODE LABEL

OVERALL WIRING DIAGRAM

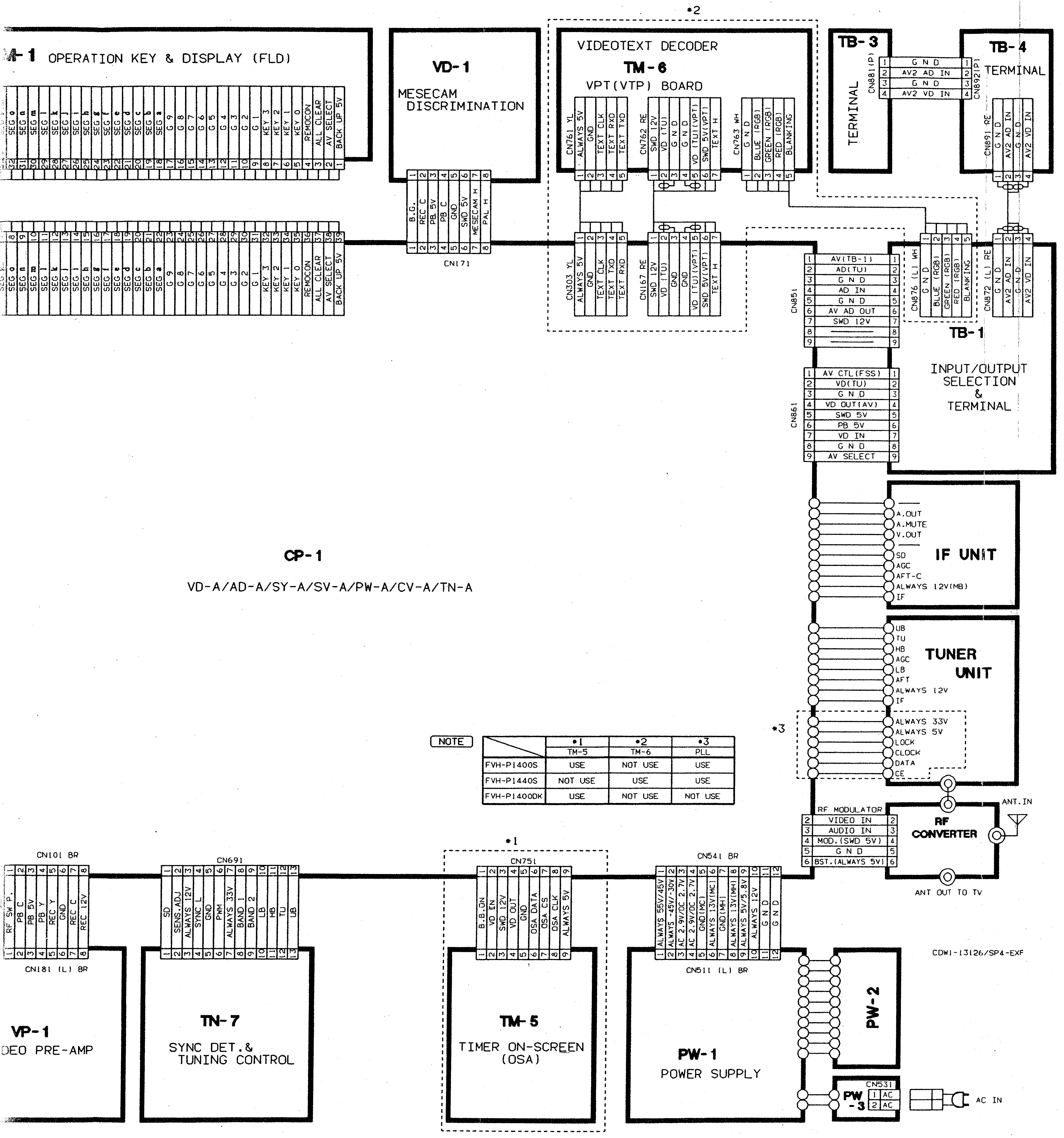

CAPSTAN MOTOR
MC
HEAD DRUM MOTOR
MH
MC-1
SENSOR
SENSOR LED
MC-4
MC-2
MECHANISM CONNECTION
MECHA MODE SW
ML
MC-3
MECHANISM CONNECTION
F/E HEAD
MC-5
R/P HEAD
TM-2
OPERATION
CP-2
SY-B/SV-B
TM-1 OPERATION KEY & DISPLAY (FLD)
VD-1
MESECAM DISCRIMINATION
VIDEOTEXT DECODER
TM-6
VPT(VTP) BOARD
TB-3
TERMINAL
TB-4
TERMINAL
TB-1
INPUT/OUTPUT SELECTION & TERMINAL
CP-1
VD-A/AD-A/SY-A/SV-A/PW-A/CV-A/TN-A
IF UNIT
TUNER UNIT
RF CONVERTER
ANT.IN
ANT OUT TO TV
VIDEO HEAD
LP
SP
VP-1
VIDEO PRE-AMP
TN-7
SYNC DET.& TUNING CONTROL
TM-5
TIMER ON-SCREEN (OSA)
PW-1
POWER SUPPLY
PW-2
PW-3
AC IN
*1
*2
*3
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

NOTE

	*1 TM-5	*2 TM-6	*3 PLL
FVH-P1400S	USE	NOT USE	USE
FVH-P1440S	NOT USE	USE	USE
FVH-P1400DK	USE	NOT USE	NOT USE

CDW1-13126/SP4-EXF

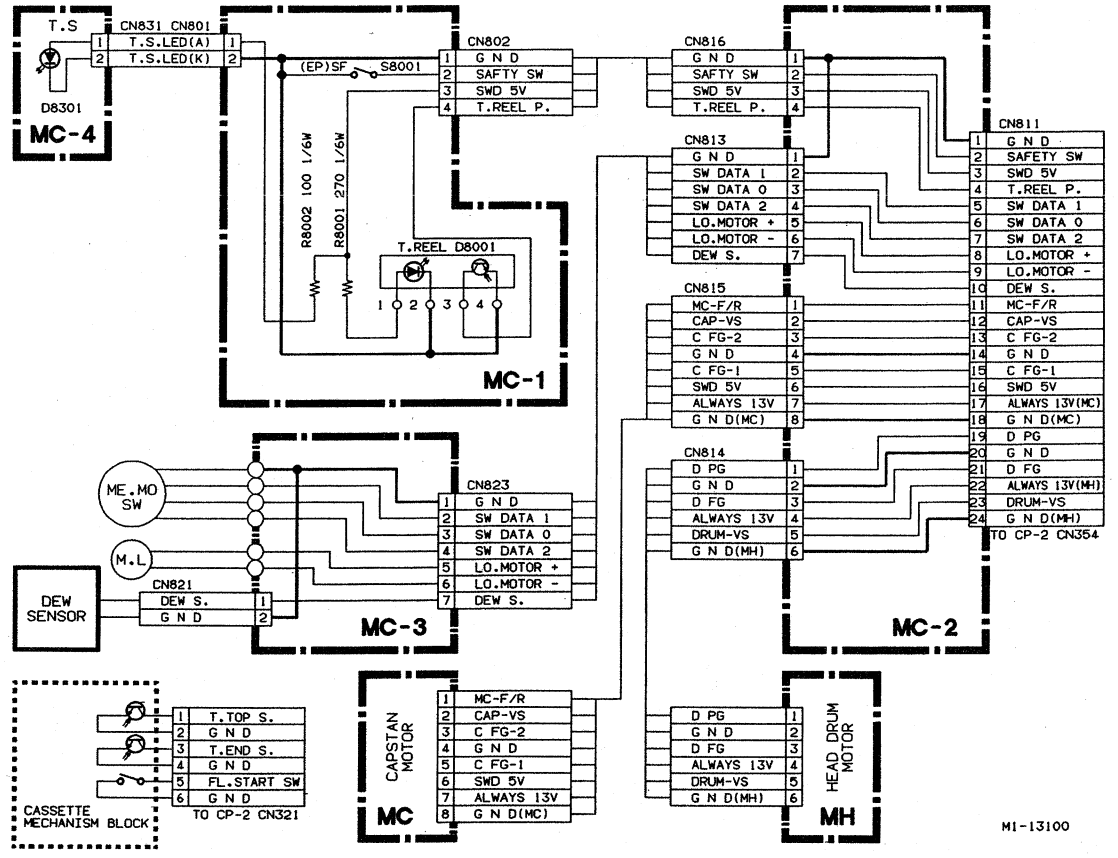
VERALL WIRING DIAGRAM


*2
OPERATION KEY & DISPLAY (FLD)
VD-1
MESECAM DISCRIMINATION
VIDEOTEXT DECODER
TM-6
VPT(VTP) BOARD
CN761 YL
CN762 RE
CN763 WH
TB-3
TERMINAL
CN881(P)
TB-4
TERMINAL
CN892(P)
CN891 RE
CN171
CN303 YL
CN167 RE
CN876 (L) WH
CN872 (L) RE
CN851
TB-1
INPUT/OUTPUT SELECTION & TERMINAL
CN861
IF UNIT
TUNER UNIT
*3
RF MODULATOR
RF CONVERTER
ANT.IN
ANT OUT TO TV
CP-1
VD-A/AD-A/SY-A/SV-A/PW-A/CV-A/TN-A
CN101 BR
CN181 (L) BR
CN691
*1
CN751
CN541 BR
CN511 (L) BR
VP-1
DEO PRE-AMP
TN-7
SYNC DET.& TUNING CONTROL
TM-5
TIMER ON-SCREEN (OSA)
PW-1
POWER SUPPLY
PW-2
PW-3
CN531
AC IN
CDW1-13126/SP4-EXF

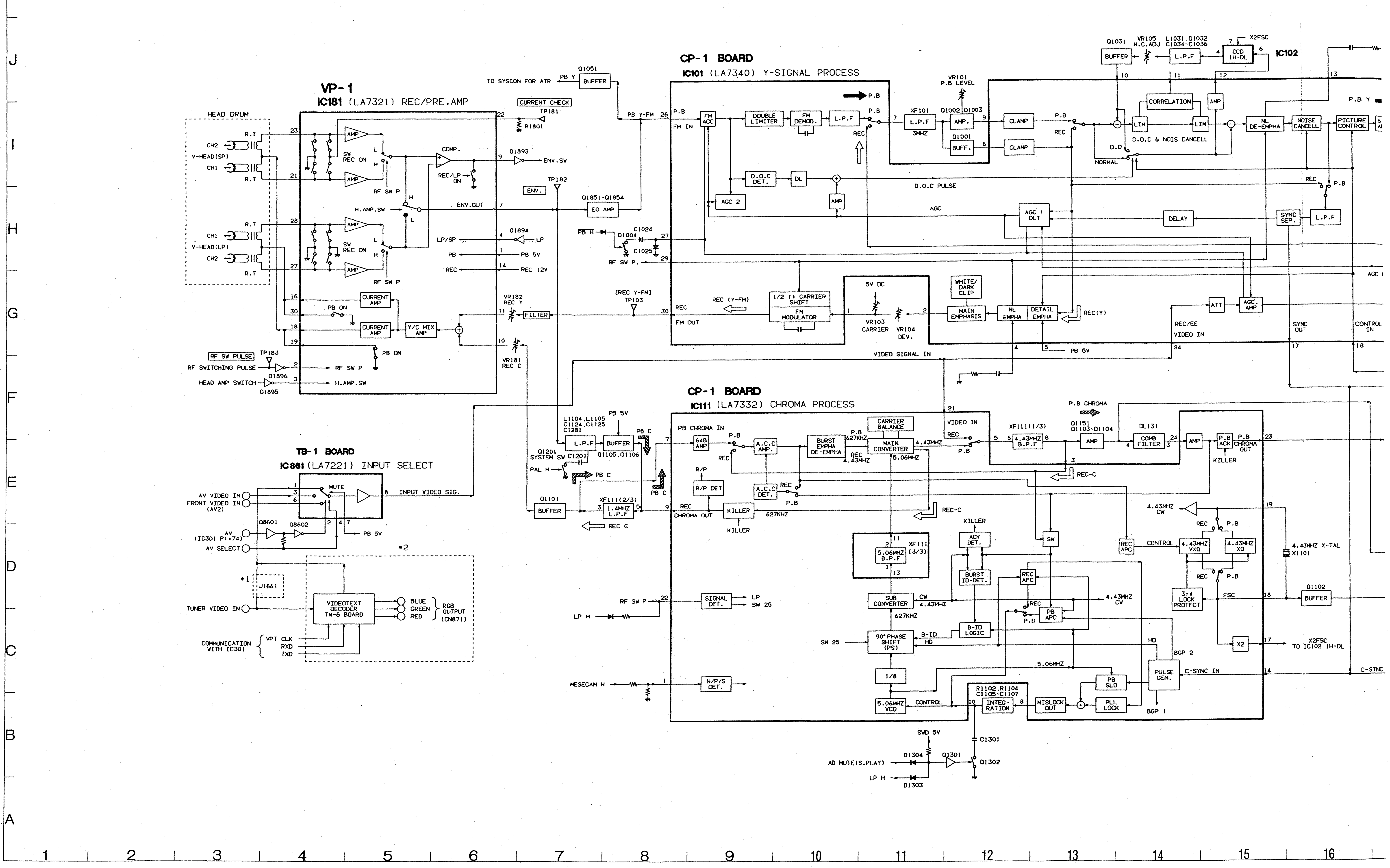
NOTE

	*1 TM-5	*2 TM-6	*3 PLL
FVH-P1400S	USE	NOT USE	USE
FVH-P1440S	NOT USE	USE	USE
FVH-P1400DK	USE	NOT USE	NOT USE

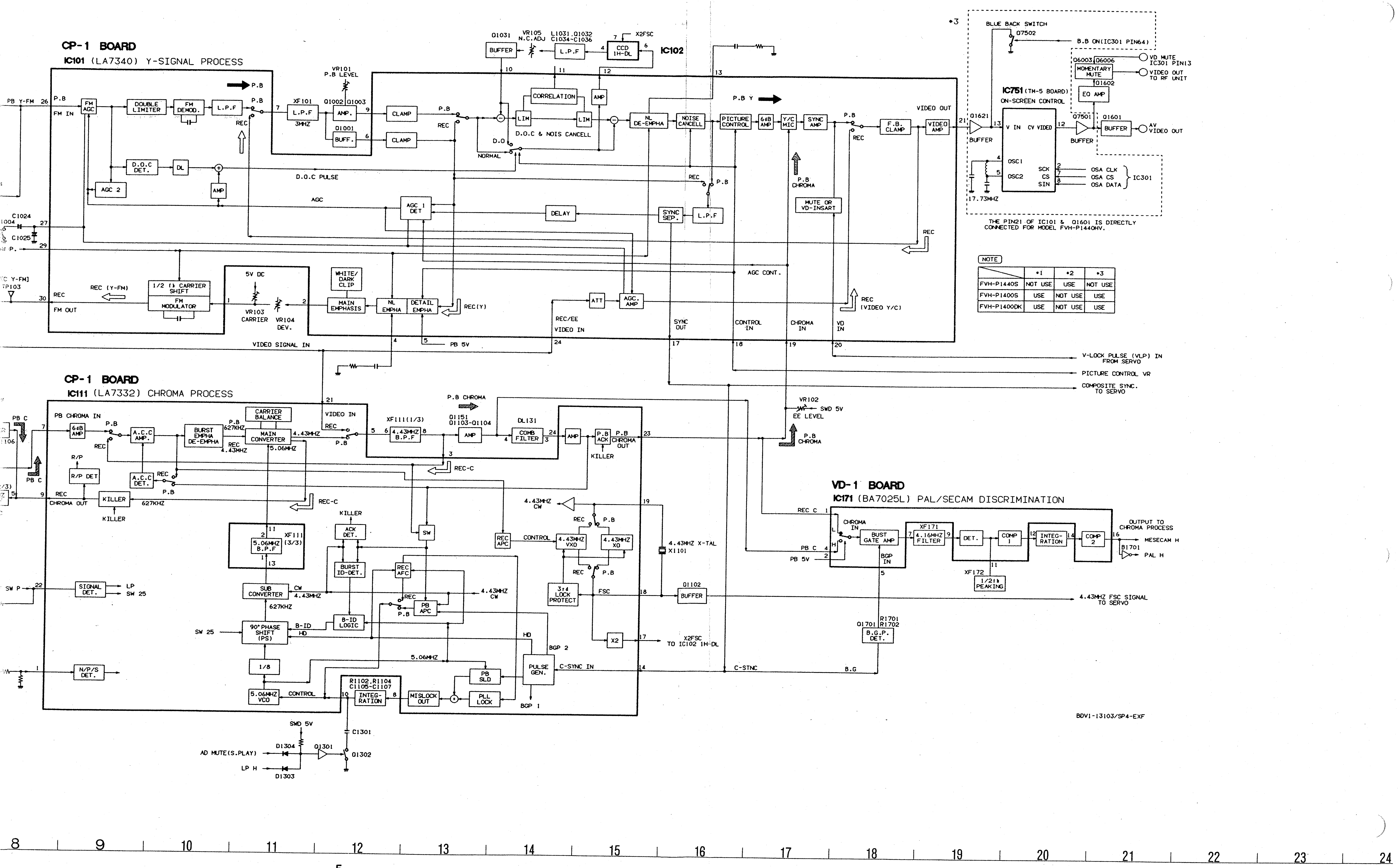
MECHANISM CONNECTION CIRCUIT DIAGRAM


T.S
D8301
MC-4
CN831
CN801
T.S.LED(A)
T.S.LED(K)
(EP)SF
S8001
R8002 100 1/6W
R8001 270 1/6W
T.REEL D8001
MC-1
CN802
CN816
CN813
CN815
CN814
CN811
TO CP-2 CN354
MC-2
ME.MO SW
M.L
DEW SENSOR
CN821
CN823
MC-3
CASSETTE MECHANISM BLOCK
TO CP-2 CN321
CAPSTAN MOTOR
MC
HEAD DRUM MOTOR
MH
MI-13100

VIDEO CIRCUIT BASIC BLOCK DIAGRAM


VP-1
IC181 (LA7321) REC/PRE.AMP
HEAD DRUM
CH2
V-HEAD(SP)
CH1
R.T
V-HEAD(LP)
AMP
SW REC ON
RF SW P
COMP.
REC/LP ON
H.AMP.SW
ENV.OUT
LP/SP
PB
REC
CURRENT AMP
PB ON
Y/C MIX AMP
CURRENT CHECK
TP181
R1801
Q1893
ENV.SW
TP182
ENV.
Q1894
PB 5V
REC 12V
VR182 REC Y
FILTER
VR181 REC C
RF SW PULSE
TP183
RF SWITCHING PULSE
Q1896
HEAD AMP SWITCH
Q1895
TO SYSCON FOR ATR
PB Y
Q1051
BUFFER
PB Y-FM
Q1851-Q1854
EQ AMP
PB H
Q1004
C1024
C1025
RF SW P.
[REC Y-FM]
TP103
CP-1 BOARD
IC101 (LA7340) Y-SIGNAL PROCESS
P.B
FM IN
FM AGC
DOUBLE LIMITER
FM DEMOD.
L.P.F
XF101
3MHZ
VR101 P.B LEVEL
Q1002 Q1003
AMP.
Q1001
BUFF.
CLAMP
D.O.C DET.
DL
AGC 2
D.O.C PULSE
AGC
AGC 1 DET
DELAY
SYNC SEP.
CORRELATION
LIM
D.O.C & NOIS CANCELL
D.O
NORMAL
NL DE-EMPHA
NOISE CANCELL
PICTURE CONTROL
Q1031
VR105 N.C.ADJ
L1031.Q1032 C1034-C1036
CCD 1H-DL
X2FSC
IC102
1/2 fH CARRIER SHIFT
FM MODULATOR
REC (Y-FM)
FM OUT
5V DC
VR103 CARRIER
VR104 DEV.
WHITE/DARK CLIP
MAIN EMPHASIS
NL EMPHA
DETAIL EMPHA
REC(Y)
ATT
AGC. AMP
REC/EE VIDEO IN
SYNC OUT
CONTROL IN
VIDEO SIGNAL IN
TB-1 BOARD
IC861 (LA7221) INPUT SELECT
AV VIDEO IN
FRONT VIDEO IN (AV2)
MUTE
INPUT VIDEO SIG.
Q8601
Q8602
AV (IC301 P1#74)
AV SELECT
J1661
TUNER VIDEO IN
VIDEOTEXT DECODER TM-6 BOARD
BLUE
GREEN
RED
RGB OUTPUT (CN871)
COMMUNICATION WITH IC301
VPT CLK
RXD
TXD
L1104.L1105 C1124.C1125 C1281
Q1105.Q1106
Q1201 SYSTEM SW
C1201
PAL H
PB C
Q1101
XF111(2/3) 1.4MHZ L.P.F
REC C
CP-1 BOARD
IC111 (LA7332) CHROMA PROCESS
PB CHROMA IN
64B AMP
A.C.C AMP.
BURST EMPHA DE-EMPHA
CARRIER BALANCE
MAIN CONVERTER
627KHZ
4.43MHZ
5.06MHZ
R/P DET
A.C.C DET.
KILLER
CHROMA OUT
REC-C
XF111(1/3) 4.43MHZ B.P.F
Q1151 Q1103-Q1104
DL131
COMB FILTER
P.B ACK
P.B CHROMA OUT
P.B CHROMA
VIDEO IN
ACK DET.
BURST ID-DET.
REC AFC
REC APC
CONTROL
4.43MHZ VXO
4.43MHZ XO
4.43MHZ CW
4.43MHZ X-TAL X1101
3rd LOCK PROTECT
FSC
Q1102
X2
X2FSC TO IC102 1H-DL
C-SYNC
C-SYNC IN
XF111 (3/3) 5.06MHZ B.P.F
SUB CONVERTER
CW
PB APC
B-ID LOGIC
B-ID
HD
90° PHASE SHIFT (PS)
1/8
5.06MHZ VCO
PULSE GEN.
BGP 2
BGP 1
PB SLD
PLL LOCK
MISLOCK OUT
INTEG-RATION
R1102.R1104 C1105-C1107
SIGNAL DET.
LP
SW 25
RF SW P
LP H
MESECAM H
N/P/S DET.
SWD 5V
C1301
D1304
Q1301
Q1302
AD MUTE(S.PLAY)
D1303
*1
*2

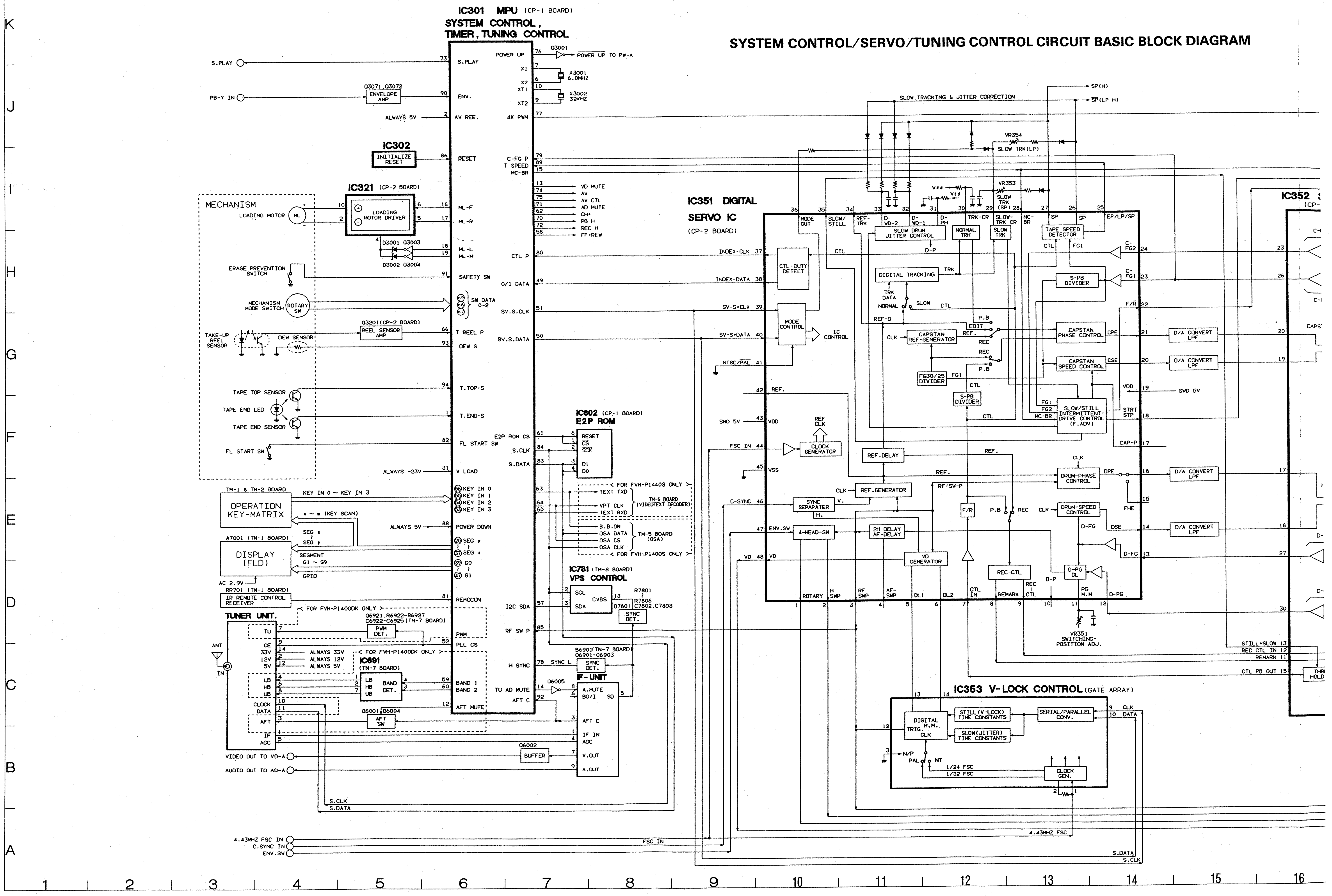
VIDEO CIRCUIT BASIC BLOCK DIAGRAM


CP-1 BOARD
IC101 (LA7340) Y-SIGNAL PROCESS
PB Y-FM
26
P.B
FM IN
FM AGC
DOUBLE LIMITER
FM DEMOD.
L.P.F
P.B
REC
D.O.C DET.
DL
AGC 2
AMP
D.O.C PULSE
AGC
AGC 1 DET
C1024
C1025
27
29
1/2 (1 CARRIER SHIFT
FM MODULATOR
REC (Y-FM)
TP103
30
REC
FM OUT
5V DC
VR103 CARRIER
VR104 DEV.
1
2
WHITE/ DARK CLIP
MAIN EMPHASIS
NL EMPHA
DETAIL EMPHA
REC(Y)
VIDEO SIGNAL IN
4
5
PB 5V
VR101 P.B LEVEL
XF101
L.P.F
3MHZ
7
Q1002 Q1003
AMP.
9
Q1001
BUFF.
6
CLAMP
CLAMP
P.B
REC
D.O
NORMAL
Q1031
BUFFER
VR105 N.C.ADJ
L1031,Q1032 C1034-C1036
L.P.F
CCD 1H-DL
7
X2FSC
6
4
IC102
10
11
12
13
CORRELATION
AMP
LIM
LIM
D.O.C & NOIS CANCELL
NL DE-EMPHA
NOISE CANCELL
P.B Y
PICTURE CONTROL
6dB AMP
Y/C MIC
SYNC AMP
P.B
REC
F.B. CLAMP
VIDEO OUT
VIDEO AMP
21
REC
P.B
P.B CHROMA
MUTE OR VD-INSART
DELAY
SYNC SEP.
L.P.F
REC
AGC CONT.
ATT
AGC. AMP
REC (VIDEO Y/C)
REC/EE VIDEO IN
SYNC OUT
CONTROL IN
CHROMA IN
VD IN
24
17
18
19
20
*3
BLUE BACK SWITCH
Q7502
B.B ON(IC301 PIN64)
Q6003,Q6006
MOMENTARY MUTE
Q1602
EQ AMP
VD MUTE IC301 PIN13
VIDEO OUT TO RF UNIT
IC751 (TM-5 BOARD)
ON-SCREEN CONTROL
Q1621
BUFFER
13
V IN
CV VIDEO
12
Q7501
BUFFER
Q1601
BUFFER
AV VIDEO OUT
4
5
OSC1
OSC2
SCK
CS
SIN
2
7
8
OSA CLK
OSA CS
OSA DATA
IC301
17.73MHZ
THE PIN21 OF IC101 & Q1601 IS DIRECTLY CONNECTED FOR MODEL FVH-P1440HV.
V-LOCK PULSE (VLP) IN FROM SERVO
PICTURE CONTROL VR
COMPOSITE SYNC. TO SERVO
CP-1 BOARD
IC111 (LA7332) CHROMA PROCESS
PB C
7
PB CHROMA IN
6dB AMP
P.B
REC
A.C.C AMP.
BURST EMPHA DE-EMPHA
P.B 627KHZ
REC 4.43MHZ
CARRIER BALANCE
MAIN CONVERTER
4.43MHZ
5.06MHZ
21
VIDEO IN
REC
P.B
R/P
R/P DET
A.C.C DET.
REC
P.B
9
REC
CHROMA OUT
KILLER
627KHZ
KILLER
REC-C
5.06MHZ B.P.F
XF111 (3/3)
2
11
1
13
SUB CONVERTER
CW 4.43MHZ
627KHZ
90° PHASE SHIFT (PS)
B-ID
HD
SW 25
1/8
5.06MHZ VCO
CONTROL
SW P
22
SIGNAL DET.
LP
SW 25
1
N/P/S DET.
KILLER
ACK DET.
BURST ID-DET.
B-ID LOGIC
SW
REC AFC
REC
P.B
PB APC
4.43MHZ CW
5.06MHZ
PB SLD
R1102,R1104 C1105-C1107
10
INTEG-RATION
8
MISLOCK OUT
PLL LOCK
SWD 5V
C1301
D1304
Q1301
Q1302
AD MUTE(S.PLAY)
LP H
D1303
P.B CHROMA
XF111(1/3)
5
6
4.43MHZ B.P.F
8
Q1151 Q1103-Q1104
AMP
3
DL131
4
COMB FILTER
3
24
AMP
P.B ACK
P.B CHROMA OUT
23
KILLER
REC-C
4.43MHZ CW
19
REC
P.B
REC APC
CONTROL
4.43MHZ VXO
4.43MHZ XO
REC
P.B
3rd LOCK PROTECT
FSC
18
4.43MHZ X-TAL X1101
Q1102
BUFFER
X2
17
X2FSC TO IC102 1H-DL
HD
BGP 2
PULSE GEN.
C-SYNC IN
14
BGP 1
C-STNC
VR102
SWD 5V
EE LEVEL
P.B CHROMA
VD-1 BOARD
IC171 (BA7025L) PAL/SECAM DISCRIMINATION
REC C
1
CHROMA IN
L
H
PB C
4
PB 5V
2
BUST GATE AMP
BGP IN
5
XF171
7
4.16MHZ FILTER
9
DET.
COMP 1
12
INTEG-RATION
14
COMP 2
16
11
XF172
1/2fh PEAKING
OUTPUT TO CHROMA PROCESS
MESECAM H
B1701
PAL H
Q1701
R1701 R1702
B.G.P. DET.
B.G
4.43MHZ FSC SIGNAL TO SERVO
BDV1-13103/SP4-EXF
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

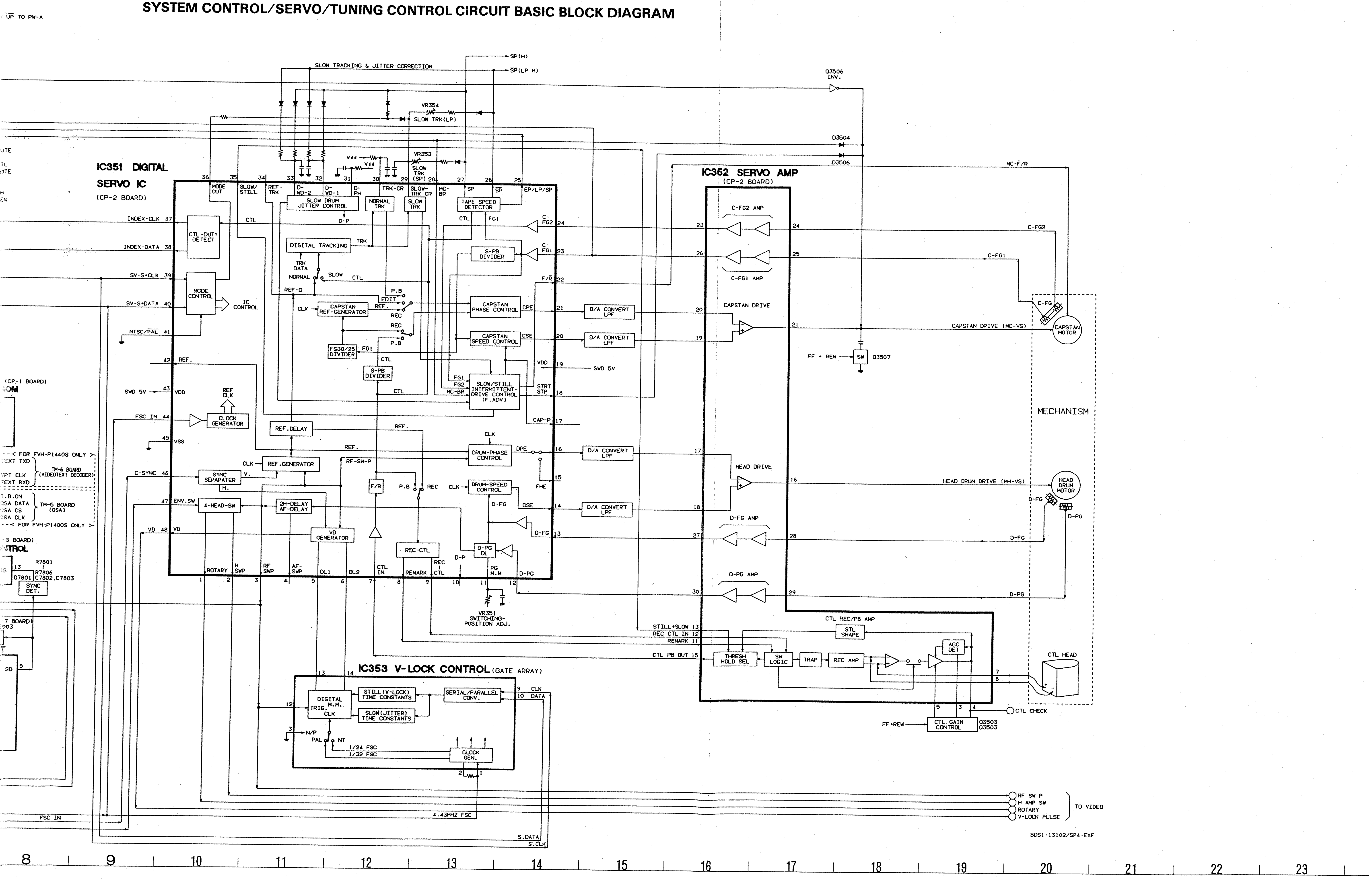
NOTE

	•1	•2	•3
FVH-P1440S	NOT USE	USE	NOT USE
FVH-P1400S	USE	NOT USE	USE
FVH-P1400DK	USE	NOT USE	USE

SYSTEM CONTROL/SERVO/TUNING CONTROL CIRCUIT BASIC BLOCK DIAGRAM


IC301 MPU (CP-1 BOARD)
SYSTEM CONTROL, TIMER, TUNING CONTROL
S.PLAY
PB-Y IN
Q3071,Q3072 ENVELOPE AMP
ENV.
ALWAYS 5V
AV REF.
POWER UP
Q3001
POWER UP TO PW-A
X1
X2
XT1
XT2
X3001 6.0MHZ
X3002 32KHZ
4K PWM
IC302 INITIALIZE RESET
RESET
C-FG P
T SPEED
MC-BR
VD MUTE
AV
AV CTL
AD MUTE
CH+
PB H
REC H
FF+REW
IC321 (CP-2 BOARD)
LOADING MOTOR DRIVER
MECHANISM
LOADING MOTOR
ML
ML-F
ML-R
ML-L
ML-M
D3001 D3003
D3002 D3004
CTL P
ERASE PREVENTION SWITCH
SAFETY SW
0/1 DATA
MECHANISM MODE SWITCH
ROTARY SW
SW DATA 0-2
SV.S.CLK
TAKE-UP REEL SENSOR
DEW SENSOR
Q3201(CP-2 BOARD)
REEL SENSOR AMP
T REEL P
DEW S
SV.S.DATA
TAPE TOP SENSOR
TAPE END LED
TAPE END SENSOR
FL START SW
T.TOP-S
T.END-S
FL START SW
IC602 (CP-1 BOARD)
E2P ROM
E2P ROM CS
S.CLK
S.DATA
RESET
CS
SCK
DI
DO
ALWAYS -23V
V LOAD
TM-1 & TM-2 BOARD
OPERATION KEY-MATRIX
KEY IN 0 ~ KEY IN 3
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
(KEY SCAN)
< FOR FVH-P1440S ONLY >
TEXT TXD
VPT CLK
TEXT RXD
TM-6 BOARD (VIDEOTEXT DECODER)
ALWAYS 5V
POWER DOWN
A7001 (TM-1 BOARD)
DISPLAY (FLD)
SEG
SEGMENT
G1 ~ G9
GRID
B.B.ON
OSA DATA
OSA CS
OSA CLK
TM-5 BOARD (OSA)
< FOR FVH-P1400S ONLY >
AC 2.9V
RR701 (TM-1 BOARD)
IR REMOTE CONTROL RECEIVER
REMOCON
IC781 (TM-8 BOARD)
VPS CONTROL
SCL
SDA
CVBS
R7801 / R7806
Q7801 C7802,C7803
SYNC DET.
I2C SDA
< FOR FVH-P1400DK ONLY >
TUNER UNIT
Q6921,R6922-R6927
C6922-C6925 (TN-7 BOARD)
PWM DET.
PWM
TU
RF SW P
ANT IN
CE
33V
12V
5V
ALWAYS 33V
ALWAYS 12V
ALWAYS 5V
PLL CS
< FOR FVH-P1400DK ONLY >
IC691 (TN-7 BOARD)
BAND DET.
LB
HB
UB
B6901(TN-7 BOARD)
Q6901-Q6903
SYNC DET.
H SYNC
SYNC L
BAND 1
BAND 2
TU AD MUTE
AFT C
AFT MUTE
Q6005
IF-UNIT
A.MUTE
BG/I
SD
CLOCK
DATA
AFT
IF
AGC
Q6001-Q6004
AFT SW
AFT C
IF IN
Q6002
BUFFER
VIDEO OUT TO VD-A
AUDIO OUT TO AD-A
V.OUT
A.OUT
S.CLK
S.DATA
4.43MHZ FSC IN
C.SYNC IN
ENV.SW
FSC IN
IC351 DIGITAL SERVO IC (CP-2 BOARD)
SLOW TRACKING & JITTER CORRECTION
SP(H)
SP(LP H)
VR354
SLOW TRK(LP)
VR353
SLOW TRK (SP)
Vdd
MODE OUT
SLOW/STILL
REF-TRK
D-WD-2
D-WD-1
D-PH
TRK-CR
SLOW-TRK CR
MC-BR
SP
EP/LP/SP
SLOW DRUM JITTER CONTROL
NORMAL TRK
SLOW TRK
TAPE SPEED DETECTOR
INDEX-CLK
INDEX-DATA
SV-S-CLK
SV-S-DATA
NTSC/PAL
CTL-DUTY DETECT
MODE CONTROL
IC CONTROL
CTL
D-P
FG1
C-FG2
C-FG1
DIGITAL TRACKING
TRK
TRK DATA
NORMAL
SLOW
S-PB DIVIDER
F/R
REF-D
CLK
CAPSTAN REF-GENERATOR
P.B
EDIT
REF.
REC
CAPSTAN PHASE CONTROL
CPE
CAPSTAN SPEED CONTROL
CSE
D/A CONVERT LPF
FG30/25 DIVIDER
S-PB DIVIDER
VDD
SWD 5V
FG2
SLOW/STILL INTERMITTENT-DRIVE CONTROL (F.ADV)
STRT STP
REF.
VDD
REF CLK
FSC IN
CLOCK GENERATOR
VSS
REF.DELAY
CAP-P
CLK
DRUM-PHASE CONTROL
DPE
REF.GENERATOR
RF-SW-P
C-SYNC
SYNC SEPAPATER
V.
H.
P.B
REC
DRUM-SPEED CONTROL
FHE
ENV.SW
4-HEAD-SW
2H-DELAY AF-DELAY
D-FG
DSE
VD
VD GENERATOR
REC-CTL
D-PG DL
D-FG
ROTARY
H SWP
RF SWP
AF-SWP
DL1
DL2
CTL IN
REMARK
REC CTL
PG H.M
D-PG
VR351 SWITCHING-POSITION ADJ.
STILL+SLOW
REC CTL IN
REMARK
CTL PB OUT
IC352
CAPS
THR HOLD
IC353 V-LOCK CONTROL (GATE ARRAY)
DIGITAL M.M.
TRIG.
CLK
STILL(V-LOCK) TIME CONSTANTS
SLOW(JITTER) TIME CONSTANTS
SERIAL/PARALLEL CONV.
CLK
DATA
N/P
PAL
NT
1/24 FSC
1/32 FSC
CLOCK GEN.
4.43MHZ FSC
S.DATA
S.CLK
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

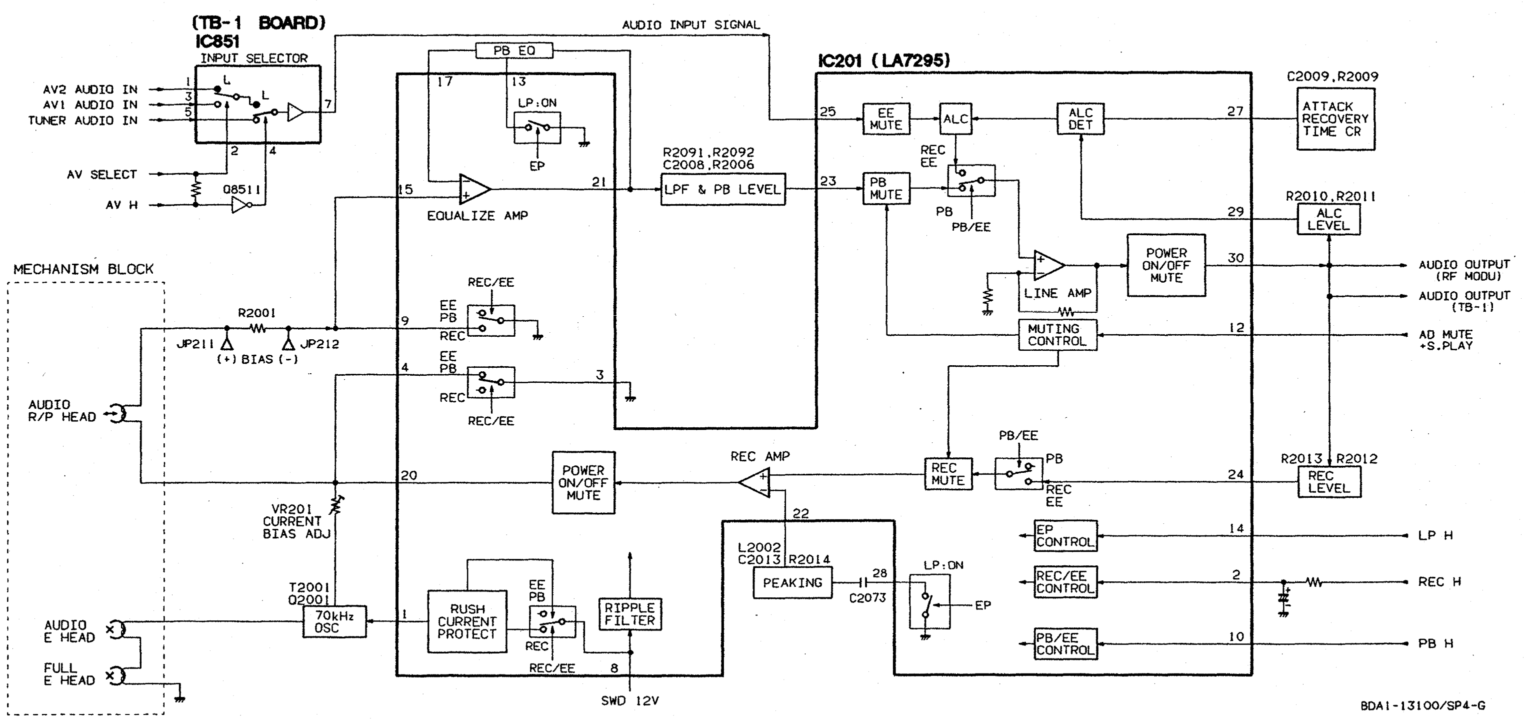
SYSTEM CONTROL/SERVO/TUNING CONTROL CIRCUIT BASIC BLOCK DIAGRAM


UP TO PW-A
SLOW TRACKING & JITTER CORRECTION
SP(H)
SP(LP H)
VR354
SLOW TRK(LP)
VR353
SLOW TRK (SP)
Vdd
IC351 DIGITAL SERVO IC
(CP-2 BOARD)
MODE OUT
SLOW/STILL
REF-TRK
D-WD-2
D-WD-1
D-PH
TRK-CR
SLOW-TRK CR
MC-BR
SP
EP/LP/SP
SLOW DRUM JITTER CONTROL
NORMAL TRK
SLOW TRK
TAPE SPEED DETECTOR
D-P
CTL
FG1
INDEX-CLK 37
INDEX-DATA 38
SV-S-CLK 39
SV-S-DATA 40
NTSC/PAL 41
42 REF.
SWD 5V 43 VDD
FSC IN 44
45 VSS
C-SYNC 46
47 ENV.SW
VD 48 VD
CTL-DUTY DETECT
MODE CONTROL
IC CONTROL
DIGITAL TRACKING
TRK
TRK DATA
NORMAL
SLOW
REF-D
EDIT
P.B
REF.
REC
CLK
CAPSTAN REF-GENERATOR
CAPSTAN PHASE CONTROL
CPE
CAPSTAN SPEED CONTROL
CSE
FG30/25 DIVIDER
S-PB DIVIDER
SLOW/STILL INTERMITTENT-DRIVE CONTROL (F.ADV)
FG2
MC-BR
C-FG2 24
C-FG1 23
F/R 22
21
20
VDD 19
SWD 5V
STRT STP 18
CAP-P 17
16
15
14
13
REF CLK
CLOCK GENERATOR
REF.DELAY
REF.GENERATOR
RF-SW-P
DRUM-PHASE CONTROL
DPE
FHE
DRUM-SPEED CONTROL
D-FG
DSE
SYNC SEPAPATER
H.
V.
4-HEAD-SW
2H-DELAY AF-DELAY
VD GENERATOR
F/R
REC-CTL
D-PG DL
D-P
D-PG
ROTARY
H SWP
RF SWP
AF-SWP
DL1
DL2
CTL IN
REMARK
REC I CTL
PG M.M
1 2 3 4 5 6 7 8 9 10 11 12
VR351 SWITCHING-POSITION ADJ.
D/A CONVERT LPF
IC352 SERVO AMP
(CP-2 BOARD)
C-FG2 AMP
C-FG1 AMP
CAPSTAN DRIVE
HEAD DRIVE
D-FG AMP
D-PG AMP
CTL REC/PB AMP
STL SHAPE
STILL+SLOW 13
REC CTL IN 12
REMARK 11
CTL PB OUT 15
THRESH HOLD SEL
SW LOGIC
TRAP
REC AMP
AGC DET
CTL GAIN CONTROL
Q3503
Q3503
FF+REW
CTL CHECK
Q3506 INV.
D3504
D3506
MC-F/R
C-FG2
C-FG1
C-FG
CAPSTAN DRIVE (MC-VS)
CAPSTAN MOTOR
FF + REW
SW
Q3507
MECHANISM
HEAD DRUM DRIVE (MH-VS)
HEAD DRUM MOTOR
D-FG
D-PG
CTL HEAD
IC353 V-LOCK CONTROL (GATE ARRAY)
DIGITAL M.M. TRIG. CLK
STILL (V-LOCK) TIME CONSTANTS
SLOW (JITTER) TIME CONSTANTS
SERIAL/PARALLEL CONV.
9 CLK
10 DATA
N/P
PAL
NT
1/24 FSC
1/32 FSC
CLOCK GEN.
4.43MHZ FSC
S.DATA
S.CLK
FSC IN
RF SW P
H AMP SW
ROTARY
V-LOCK PULSE
TO VIDEO
(CP-1 BOARD)
< FOR FVH-P1440S ONLY >
TEXT TXD
VPT CLK
TEXT RXD
TH-6 BOARD (VIDEOTEXT DECODER)
B.ON
OSA DATA
OSA CS
OSA CLK
TH-5 BOARD (OSA)
< FOR FVH-P1400S ONLY >
-8 BOARD)
R7801
R7806
Q7801
C7802,C7803
SYNC DET.
-7 BOARD)
SD
BDS1-13102/SP4-EXF
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

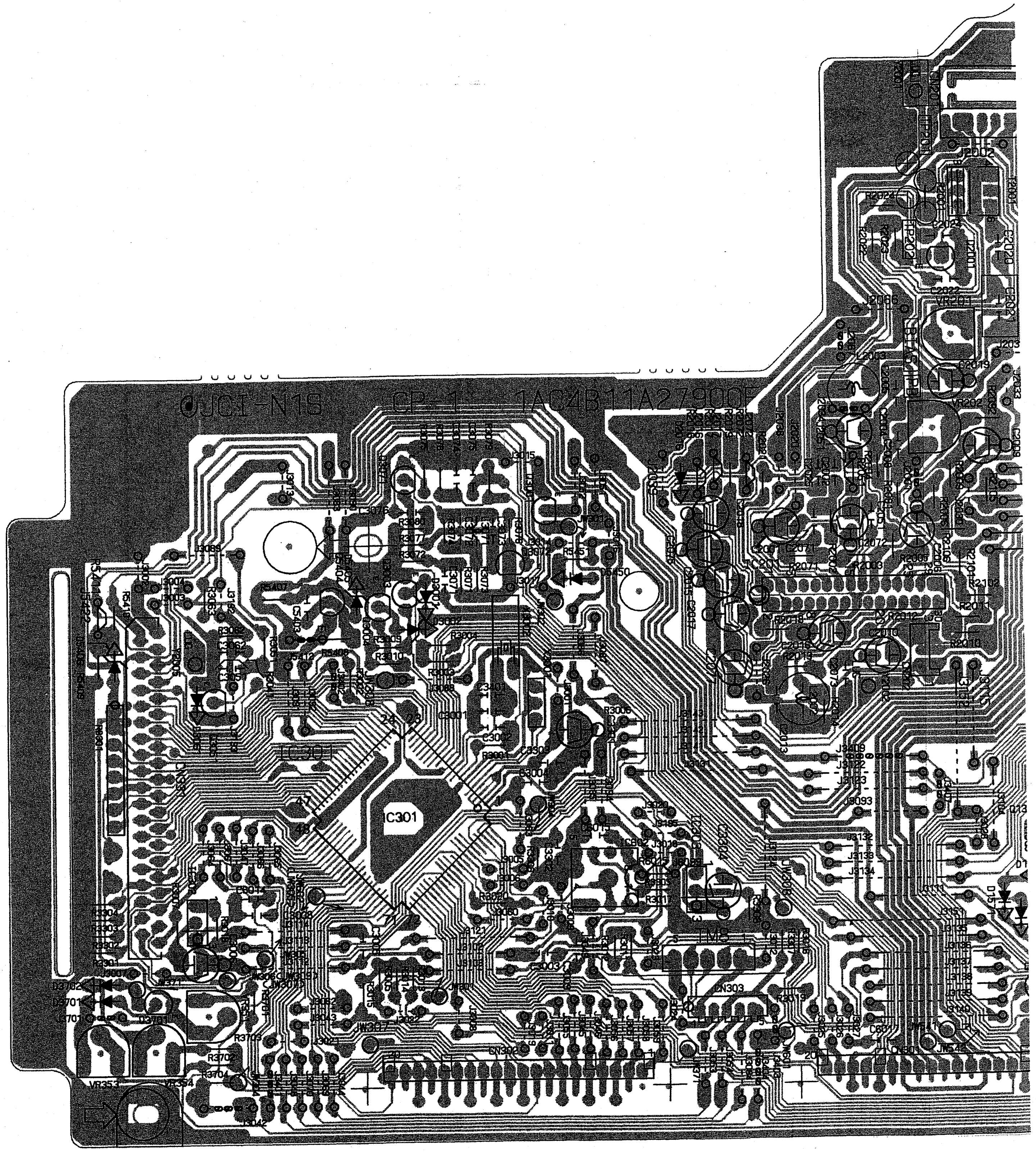
K
J
I
H
G
F
E
D
C
B
A

CP-1 P.C.B.

AUDIO CIRCUIT BASIC BLOCK DIAGRAM

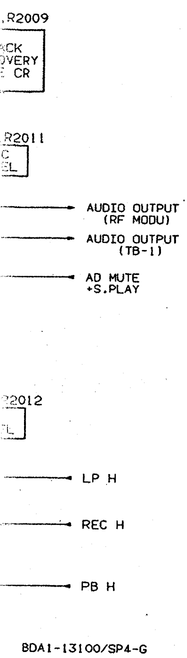

(TB-1 BOARD)
IC851
INPUT SELECTOR
AV2 AUDIO IN
AV1 AUDIO IN
TUNER AUDIO IN
AV SELECT
AV H
Q8511
AUDIO INPUT SIGNAL
PB EQ
LP:ON
EP
EQUALIZE AMP
R2091,R2092
C2008,R2006
LPF & PB LEVEL
IC201 (LA7295)
EE MUTE
ALC
ALC DET
REC
EE
PB MUTE
PB
PB/EE
LINE AMP
POWER ON/OFF MUTE
MUTING CONTROL
C2009,R2009
ATTACK RECOVERY TIME CR
R2010,R2011
ALC LEVEL
AUDIO OUTPUT (RF MODU)
AUDIO OUTPUT (TB-1)
AD MUTE +S.PLAY
MECHANISM BLOCK
R2001
JP211
JP212
(+) BIAS (-)
REC/EE
EE
PB
REC
AUDIO R/P HEAD
POWER ON/OFF MUTE
REC AMP
REC MUTE
R2013,R2012
REC LEVEL
VR201 CURRENT BIAS ADJ
L2002
C2013
R2014
PEAKING
C2073
EP CONTROL
REC/EE CONTROL
PB/EE CONTROL
LP H
REC H
PB H
T2001
Q2001
70kHz OSC
RUSH CURRENT PROTECT
RIPPLE FILTER
SWD 12V
AUDIO E HEAD
FULL E HEAD
1
2
3
4
5
7
8
9
10
12
13
14
15
17
20
21
22
23
24
25
27
28
29
30

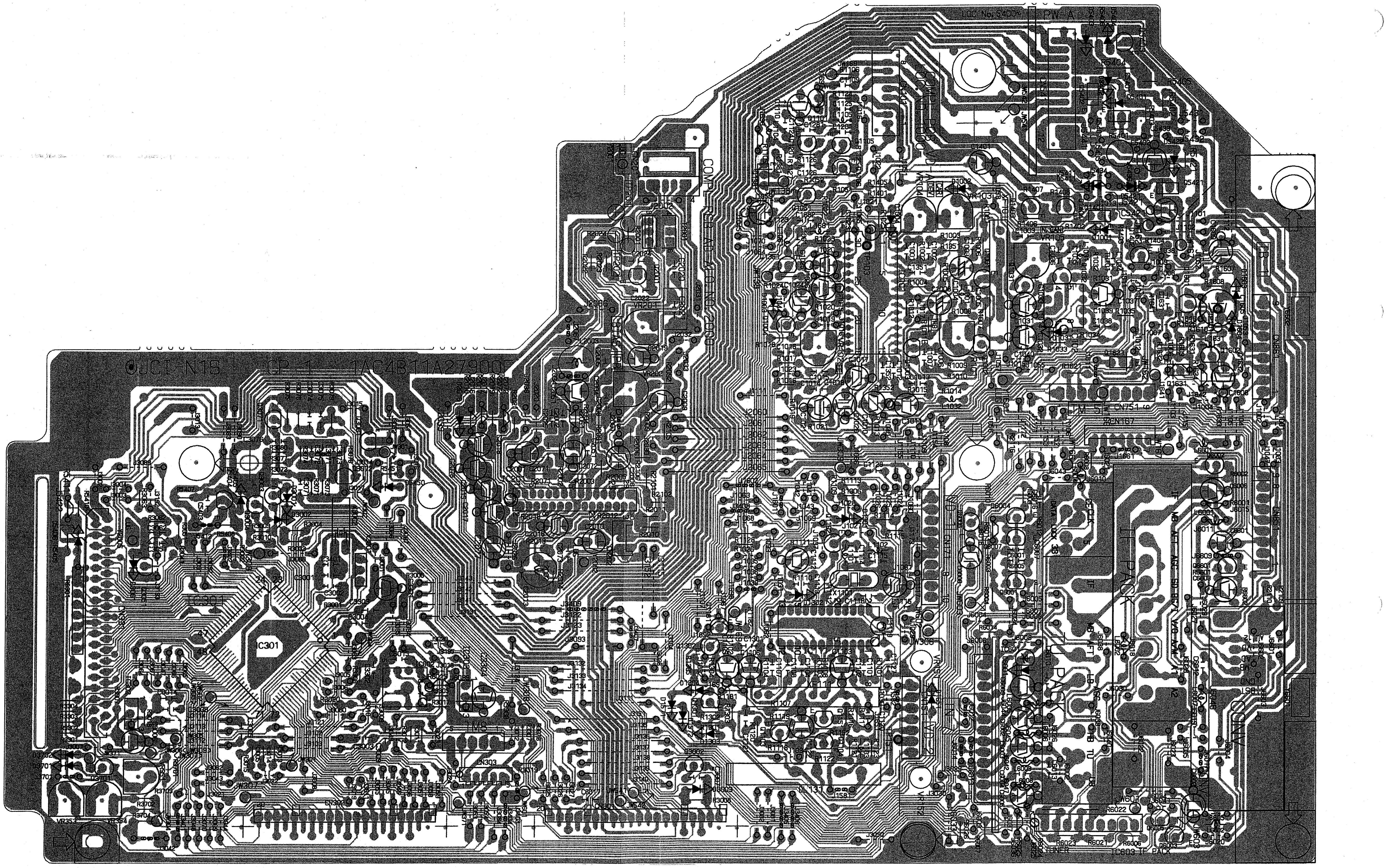
BDA1-13100/SP4-G


CP-1
IC301
VR201

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

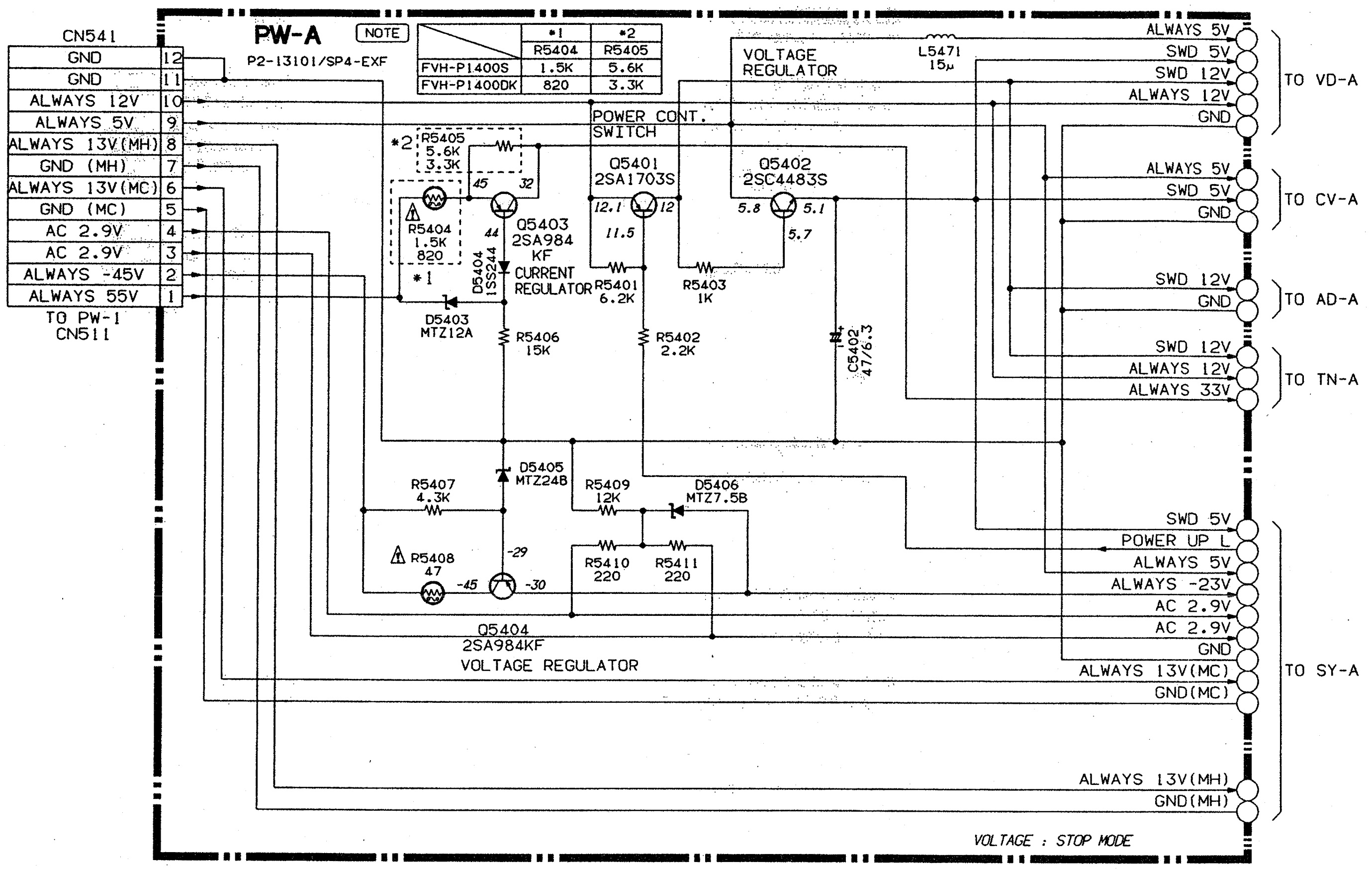
CP-1 P.C.B.


R2009
ACK
OVERY
CR
R2011
AUDIO OUTPUT
(RF MODU)
AUDIO OUTPUT
(TB-1)
AD MUTE
+S.PLAY
2012
LP H
REC H
PB H
8DA1-13100/SP4-G

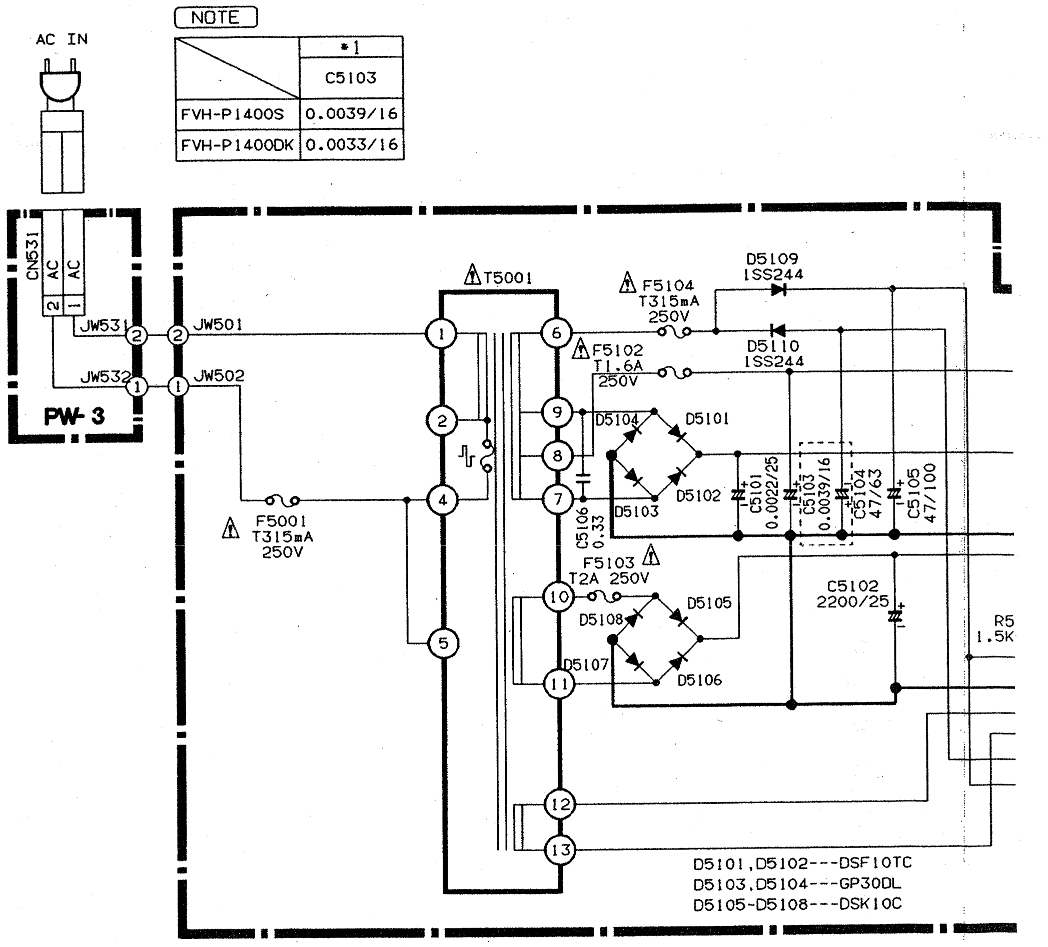

LOC No. 5400
PW-A
CN751
CN167
IC301
CP-1 1AC4B11A27900
TUNER
IC803 IF PACK

8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24

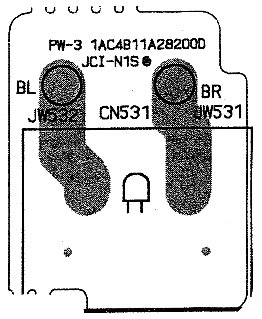
CP-1 BOARD (PW-A) POWER SUPPLY CIRCUIT DIAGRAM (FVH-P1400S & FVH-P1400DK)


PW-A
P2-13101/SP4-EXF
NOTE
*1 R5404 / *2 R5405
FVH-P1400S 1.5K 5.6K
FVH-P1400DK 820 3.3K
CN541
12 GND
11 GND
10 ALWAYS 12V
9 ALWAYS 5V
8 ALWAYS 13V(MH)
7 GND (MH)
6 ALWAYS 13V(MC)
5 GND (MC)
4 AC 2.9V
3 AC 2.9V
2 ALWAYS -45V
1 ALWAYS 55V
TO PW-1 CN511
VOLTAGE REGULATOR
L5471 15μ
POWER CONT. SWITCH
Q5401 2SA1703S
Q5402 2SC4483S
Q5403 2SA984 KF
CURRENT REGULATOR
D5403 MTZ12A
D5404 1SS244
R5404 1.5K 820
R5405 5.6K 3.3K
R5401 6.2K
R5403 1K
R5406 15K
R5402 2.2K
C5402 47/6.3
D5405 MTZ24B
R5407 4.3K
R5409 12K
D5406 MTZ7.5B
R5408 47
R5410 220
R5411 220
Q5404 2SA984KF
VOLTAGE REGULATOR
ALWAYS 5V
SWD 5V
SWD 12V
ALWAYS 12V
GND
TO VD-A
ALWAYS 5V
SWD 5V
GND
TO CV-A
SWD 12V
GND
TO AD-A
SWD 12V
ALWAYS 12V
ALWAYS 33V
TO TN-A
SWD 5V
POWER UP L
ALWAYS 5V
ALWAYS -23V
AC 2.9V
AC 2.9V
GND
ALWAYS 13V(MC)
GND(MC)
TO SY-A
ALWAYS 13V(MH)
GND(MH)
VOLTAGE : STOP MODE

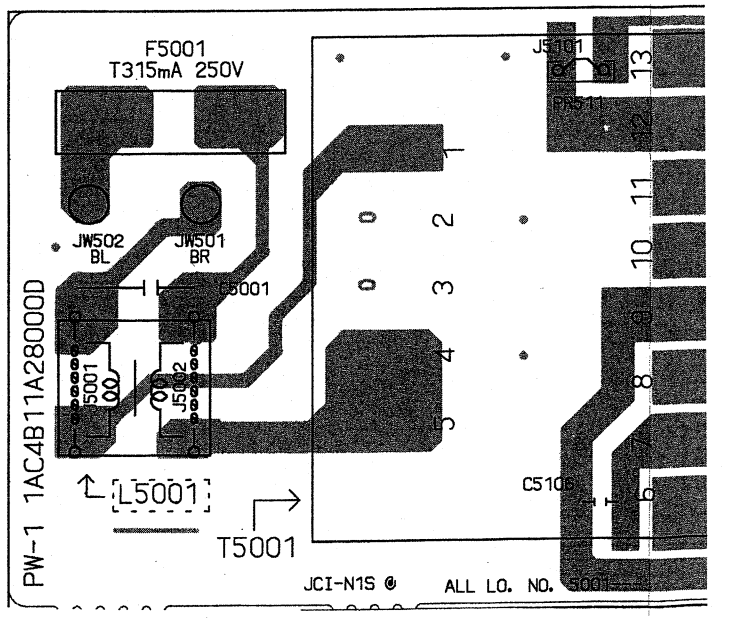
PW-1, 2, 3 BOARD POWER SUPPLY CIRCUIT


AC IN
NOTE
*1 C5103
FVH-P1400S 0.0039/16
FVH-P1400DK 0.0033/16
CN531
AC AC
JW531
JW532
PW-3
JW501
JW502
F5001 T315mA 250V
T5001
F5104 T315mA 250V
F5102 T1.6A 250V
F5103 T2A 250V
D5109 1SS244
D5110 1SS244
D5101
D5102
D5103
D5104
D5105
D5106
D5107
D5108
C5106 0.33
C5101 0.0022/25
C5103 0.0039/16
C5104 47/63
C5105 47/100
C5102 2200/25
1.5K
D5101,D5102---DSF10TC
D5103,D5104---GP30DL
D5105-D5108---DSK10C

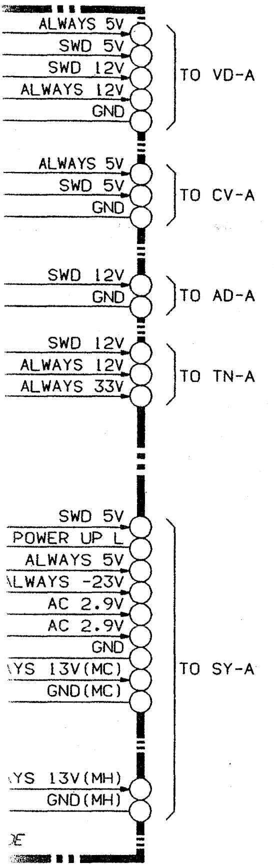
PW-3 P.C.B.


PW-3 1AC4B11A28200D
JCI-N1S
BL
BR
JW532
CN531
JW531

P

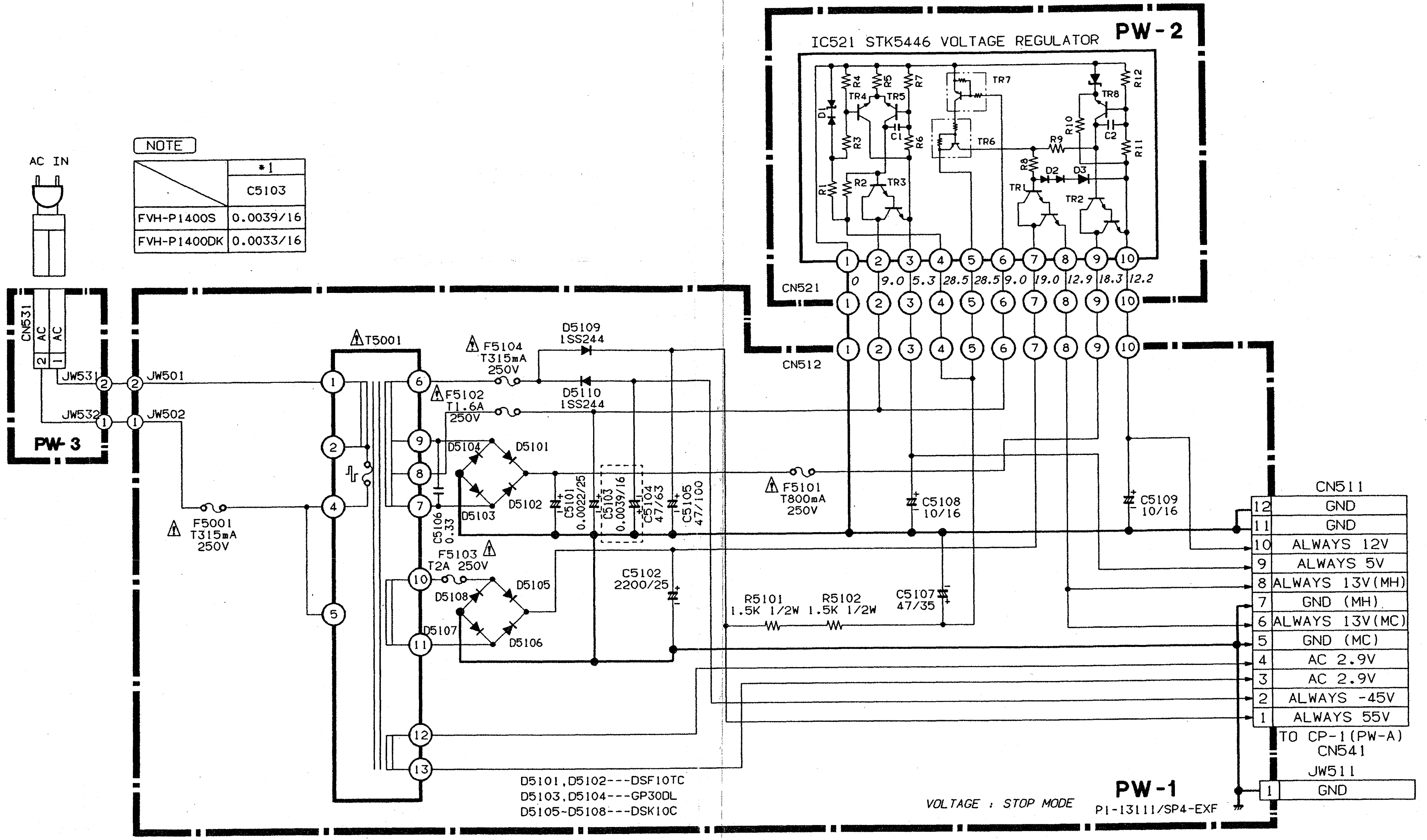

F5001
T315mA 250V
JW502 BL
JW501 BR
F5001
J5001
J5002
L5001
T5001
C5106
PW-1 1AC4B11A28000D
JCI-N1S
ALL LO. NO.

& FVH-P1400DK)



ALWAYS 5V
SWD 5V
SWD 12V
ALWAYS 12V
GND
TO VD-A
ALWAYS 5V
SWD 5V
GND
TO CV-A
SWD 12V
GND
TO AD-A
SWD 12V
ALWAYS 12V
ALWAYS 33V
TO TN-A
SWD 5V
POWER UP L
ALWAYS 5V
LWAYS -23V
AC 2.9V
AC 2.9V
GND
YS 13V(MC)
GND(MC)
TO SY-A
YS 13V(MH)
GND(MH)

PW-1, 2, 3 BOARD POWER SUPPLY CIRCUIT DIAGRAM (FVH-P1400S & FVH-P1400DK)

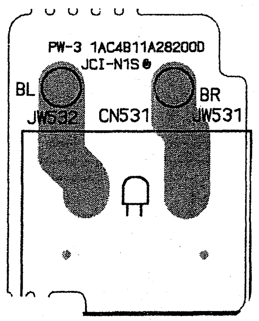


AC IN
CN531
AC
AC
2
1
JW531
JW532
PW-3
JW501
JW502
F5001
T315mA
250V
T5001
F5104
T315mA
250V
D5109
1SS244
D5110
1SS244
F5102
T1.6A
250V
D5104
D5101
D5103
D5102
C5106
0.33
C5101
0.0022/25
C5103
0.0039/16
C5104
47/63
C5105
47/100
F5103
T2A 250V
D5108
D5105
D5107
D5106
C5102
2200/25
F5101
T800mA
250V
C5108
10/16
C5109
10/16
R5101
1.5K 1/2W
R5102
1.5K 1/2W
C5107
47/35
IC521 STK5446 VOLTAGE REGULATOR
PW-2
R4
R5
R7
TR4
TR5
D1
C1
R3
R6
TR7
TR6
R1
R2
TR3
R12
TR8
R10
C2
R9
R11
R8
D2
D3
TR1
TR2
CN521
CN512
0
9.0
5.3
28.5
28.5
9.0
19.0
12.9
18.3
12.2
CN511
12 GND
11 GND
10 ALWAYS 12V
9 ALWAYS 5V
8 ALWAYS 13V(MH)
7 GND (MH)
6 ALWAYS 13V(MC)
5 GND (MC)
4 AC 2.9V
3 AC 2.9V
2 ALWAYS -45V
1 ALWAYS 55V
TO CP-1(PW-A)
CN541
JW511
1 GND
D5101,D5102---DSF10TC
D5103,D5104---GP30DL
D5105-D5108---DSK10C
VOLTAGE : STOP MODE
PW-1
P1-13111/SP4-EXF

NOTE

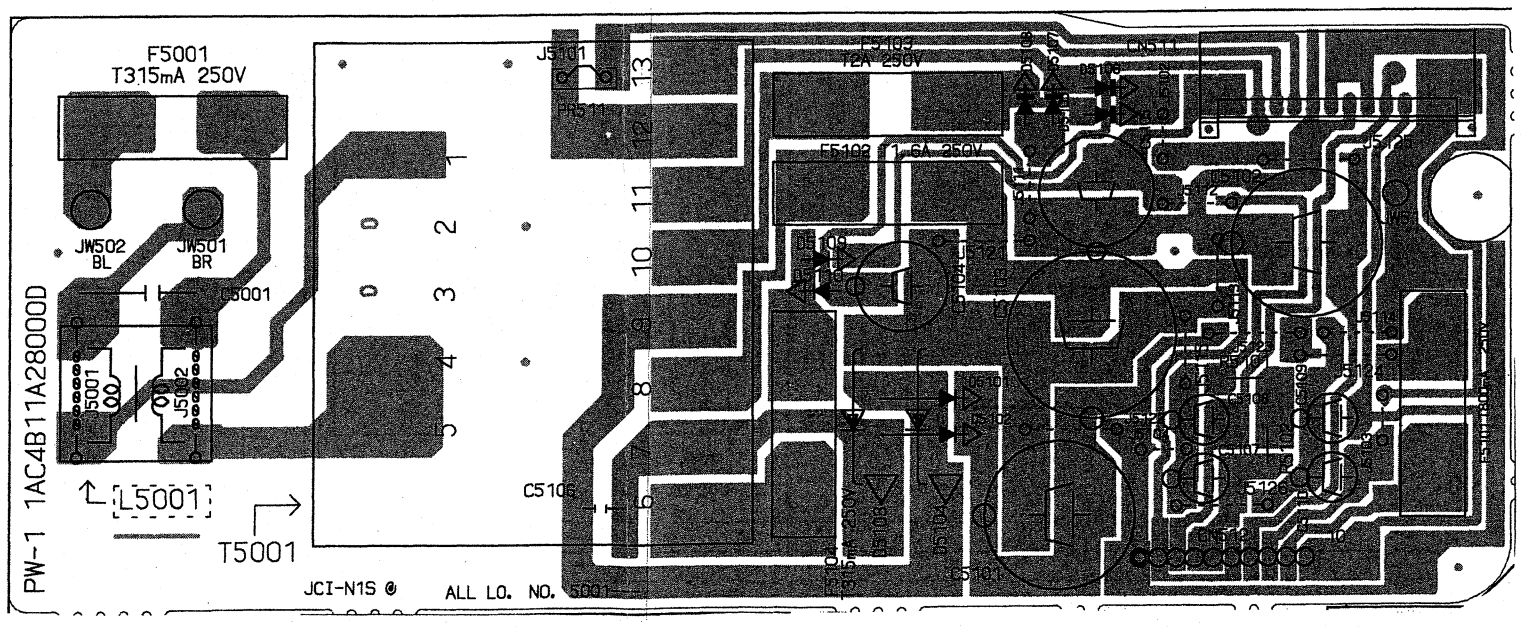
	*1
	C5103
FVH-P1400S	0.0039/16
FVH-P1400DK	0.0033/16

PW-3 P.C.B.



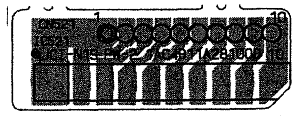
PW-3 1AC4B11A28200D
JCI-N1S
BL
BR
JW532
CN531
JW531

PW-1 P.C.B.



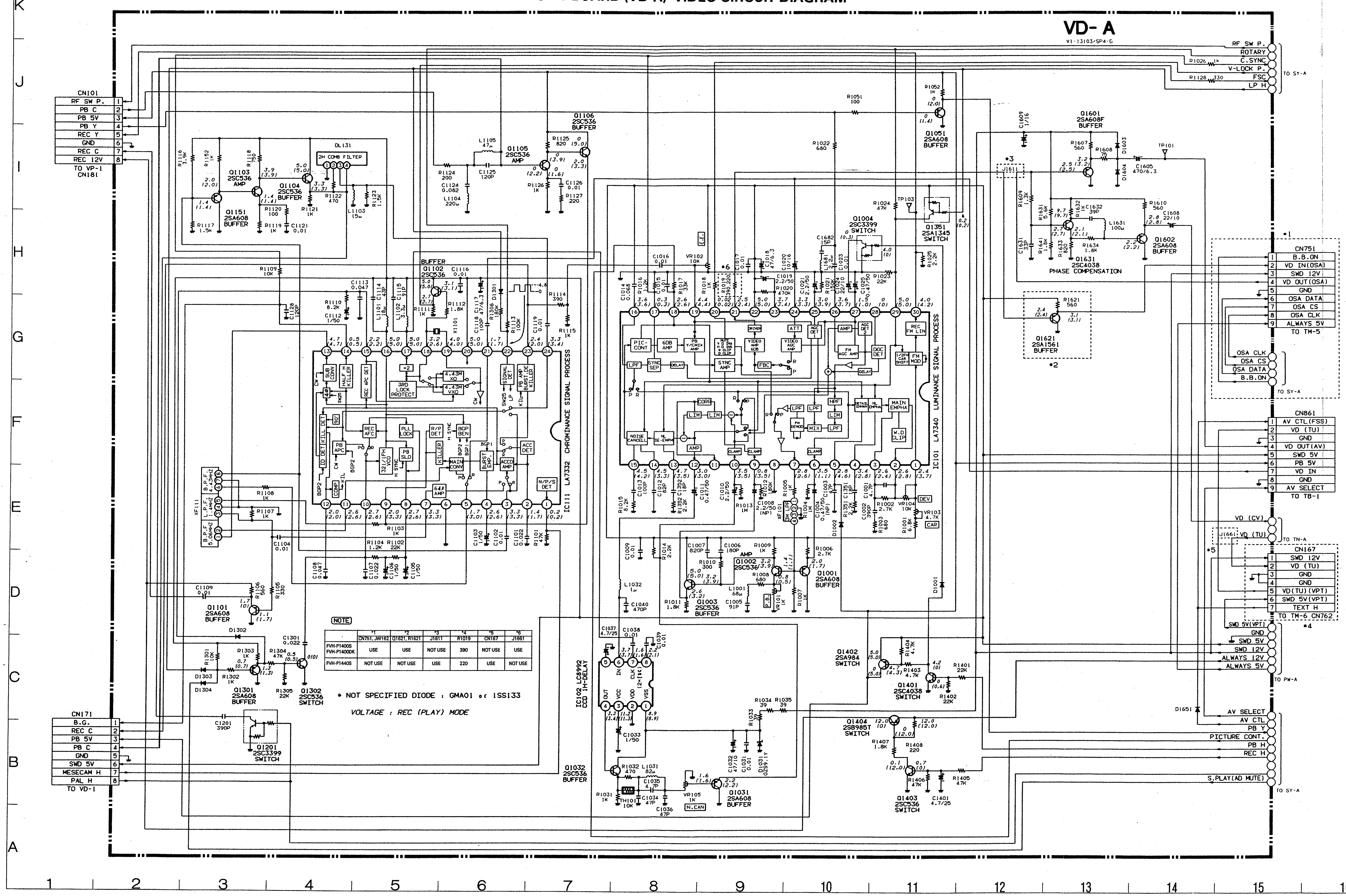
F5001
T315mA 250V
JW502
BL
JW501
BR
F5001
L5001
T5001
PW-1 1AC4B11A28000D
JCI-N1S
ALL LO. NO. 5001
J5101
F5103
T2A 250V
F5102
T1.6A 250V
CN511
C5105
1
2
3
4
5
6
7
8
9
10
11
12
13

PW-2 P.C.B.



8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

CP-1 BOARD (VD-A) VIDEO CIRCUIT DIAGRAM


VD- A
V1-13103/SP4-G
CN101
RF SW P.
PB C
PB 5V
PB Y
REC Y
GND
REC C
REC 12V
TO VP-1 CN181
CN171
B.G.
REC C
PB 5V
PB C
GND
SWD 5V
MESECAM H
PAL H
TO VD-1
RF SW P.
ROTARY
C.SYNC
V-LOCK P.
FSC
LP H
TO SY-A
CN751
B.B.ON
VD IN(OSA)
SWD 12V
VD OUT(OSA)
GND
OSA DATA
OSA CS
OSA CLK
ALWAYS 5V
TO TM-5
OSA CLK
OSA CS
OSA DATA
B.B.ON
TO SY-A
CN861
AV CTL(FSS)
VD (TU)
GND
VD OUT(AV)
SWD 5V
PB 5V
VD IN
GND
AV SELECT
TO TB-1
VD (CV)
VD (TU)
TO TN-A
CN167
SWD 12V
VD (TU)
GND
GND
VD(TU)(VPT)
SWD 5V(VPT)
TEXT H
TO TN-6 CN762
SWD 5V(VPT)
GND
SWD 5V
SWD 12V
ALWAYS 12V
ALWAYS 5V
TO PW-A
AV SELECT
AV CTL
PB Y
PICTURE CONT.
PB H
REC H
S.PLAY(AD MUTE)
TO SY-A
IC111 LA7332 CHROMINANCE SIGNAL PROCESS
IC101 LA7340 LUMINANCE SIGNAL PROCESS
IC102 LC8992 CCD 1H-DELAY
DL131 2H COMB FILTER
XF111
Q1101 2SA608 BUFFER
Q1102 2SC536 BUFFER
Q1103 2SC536 AMP
Q1104 2SC536 BUFFER
Q1105 2SC536 AMP
Q1106 2SC536 BUFFER
Q1151 2SA608 BUFFER
Q1201 2SC3399 SWITCH
Q1301 2SA608 BUFFER
Q1302 2SC536 SWITCH
Q1001 2SA608 BUFFER
Q1002 2SC536 AMP
Q1003 2SC536 BUFFER
Q1004 2SC3399 SWITCH
Q1031 2SA608 BUFFER
Q1032 2SC536 BUFFER
Q1051 2SA608 BUFFER
Q1351 2SA1345 SWITCH
Q1401 2SC4038 SWITCH
Q1402 2SA984 SWITCH
Q1403 2SC536 SWITCH
Q1404 2SB985T SWITCH
Q1601 2SA608F BUFFER
Q1602 2SA608 BUFFER
Q1621 2SA1561 BUFFER
Q1631 2SC4038 PHASE COMPENSATION
TP101
TP103
E.E.
N.CAN
J1611
J1661
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
K J I H G F E D C B A

NOTE

	*1	*2	*3	*4	*5	*6
	CN751, JW162	Q1621, R1621	J1611	R1019	CN167	J1661
FVH-P1400S FVH-P1400DK	USE	USE	NOT USE	390	NOT USE	USE
FVH-P1440S	NOT USE	NOT USE	USE	220	USE	NOT USE

* NOT SPECIFIED DIODE : GMA01 or 1SS133

VOLTAGE : REC (PLAY) MODE

WAV

TEST

IC10

IC10

IC10

IC101

IC101

IC101

IC101

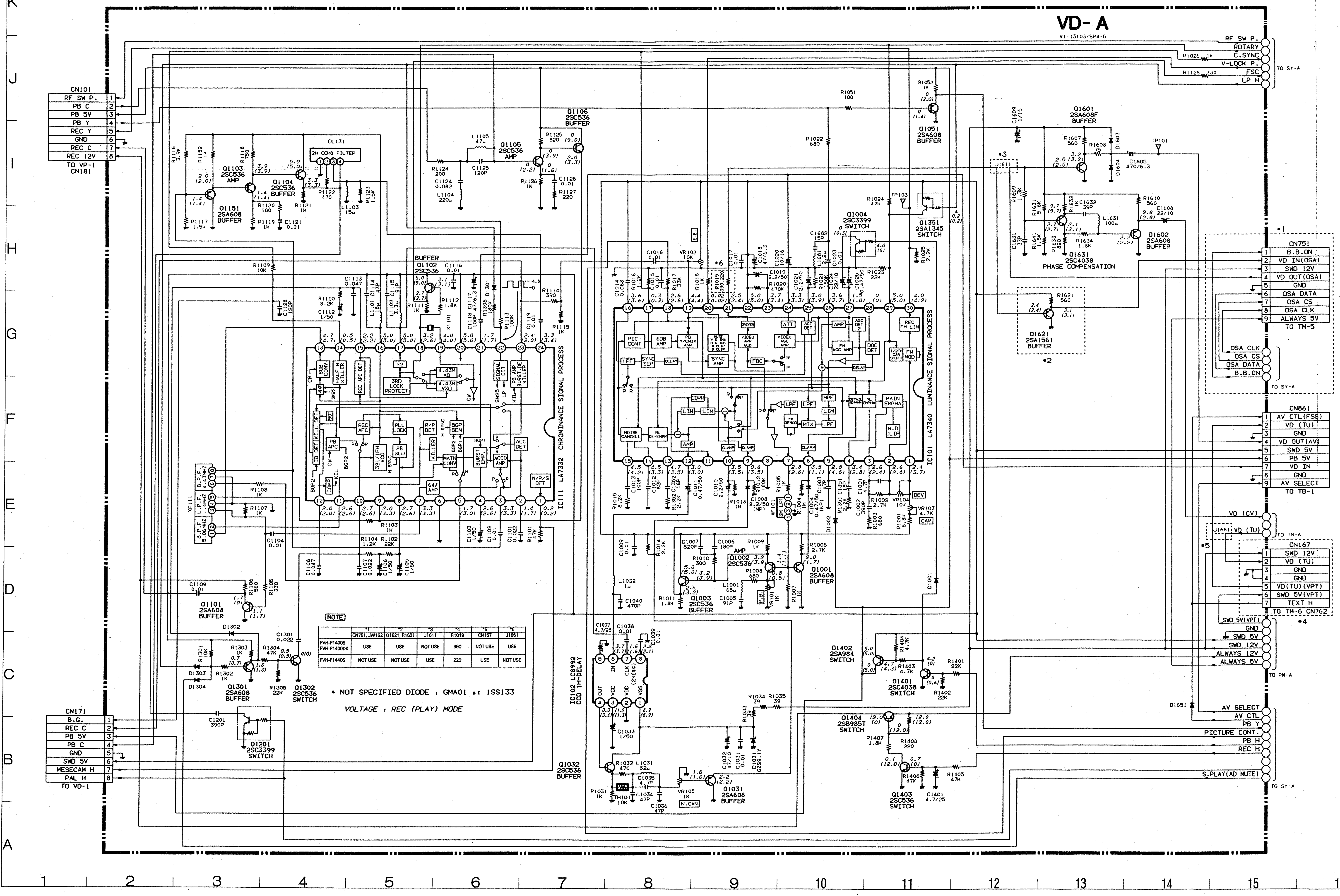
Q100

IC101

IC101

IC101

CP-1 BOARD (VD-A) VIDEO CIRCUIT DIAGRAM

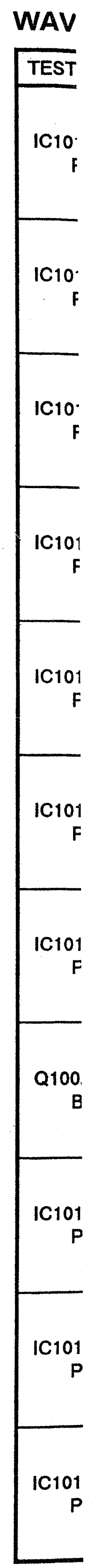

VD- A
V1-13103/SP4-G
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
CN101
RF SW P.
PB C
PB 5V
PB Y
REC Y
GND
REC C
REC 12V
TO VP-1 CN181
CN171
B.G.
REC C
PB 5V
PB C
GND
SWD 5V
MESECAM H
PAL H
TO VD-1
RF SW P.
ROTARY
C.SYNC
V-LOCK P.
FSC
LP H
TO SY-A
CN751
B.B.ON
VD IN(OSA)
SWD 12V
VD OUT(OSA)
GND
OSA DATA
OSA CS
OSA CLK
ALWAYS 5V
TO TM-5
OSA CLK
OSA CS
OSA DATA
B.B.ON
TO SY-A
CN861
AV CTL(FSS)
VD (TU)
GND
VD OUT(AV)
SWD 5V
PB 5V
VD IN
GND
AV SELECT
TO TB-1
VD (CV)
VD (TU)
TO TN-A
CN167
SWD 12V
VD (TU)
GND
GND
VD(TU)(VPT)
SWD 5V(VPT)
TEXT H
TO TM-6 CN762
SWD 5V(VPT)
GND
SWD 5V
SWD 12V
ALWAYS 12V
ALWAYS 5V
TO PW-A
AV SELECT
AV CTL
PB Y
PICTURE CONT.
PB H
REC H
S.PLAY(AD MUTE)
TO SY-A
IC111 LA7332 CHROMINANCE SIGNAL PROCESS
IC101 LA7340 LUMINANCE SIGNAL PROCESS
IC102 LC8992 CCD 1H-DELAY
DL131 2H COMB FILTER
Q1103 2SC536 AMP
Q1104 2SC536 BUFFER
Q1151 2SA608 BUFFER
Q1105 2SC536 AMP
Q1106 2SC536 BUFFER
Q1102 2SC536 BUFFER
Q1101 2SA608 BUFFER
Q1301 2SA608 BUFFER
Q1302 2SC536 SWITCH
Q1201 2SC3399 SWITCH
Q1051 2SA608 BUFFER
Q1351 2SA1345 SWITCH
Q1004 2SC3399 SWITCH
Q1002 2SC536 AMP
Q1003 2SC536 BUFFER
Q1001 2SA608 BUFFER
Q1032 2SC536 BUFFER
Q1031 2SA608 BUFFER
Q1601 2SA608F BUFFER
Q1631 2SC4038 PHASE COMPENSATION
Q1602 2SA608 BUFFER
Q1621 2SA1561 BUFFER
Q1402 2SA984 SWITCH
Q1401 2SC4038 SWITCH
Q1404 2SB985T SWITCH
Q1403 2SC536 SWITCH
XF111 B.P.F. 4.43MHz B.P.F. 1.4MHz B.P.F. 5.06MHz
TP101
TP103
•1
•2
•3
•4
•5
•6

(NOTE)

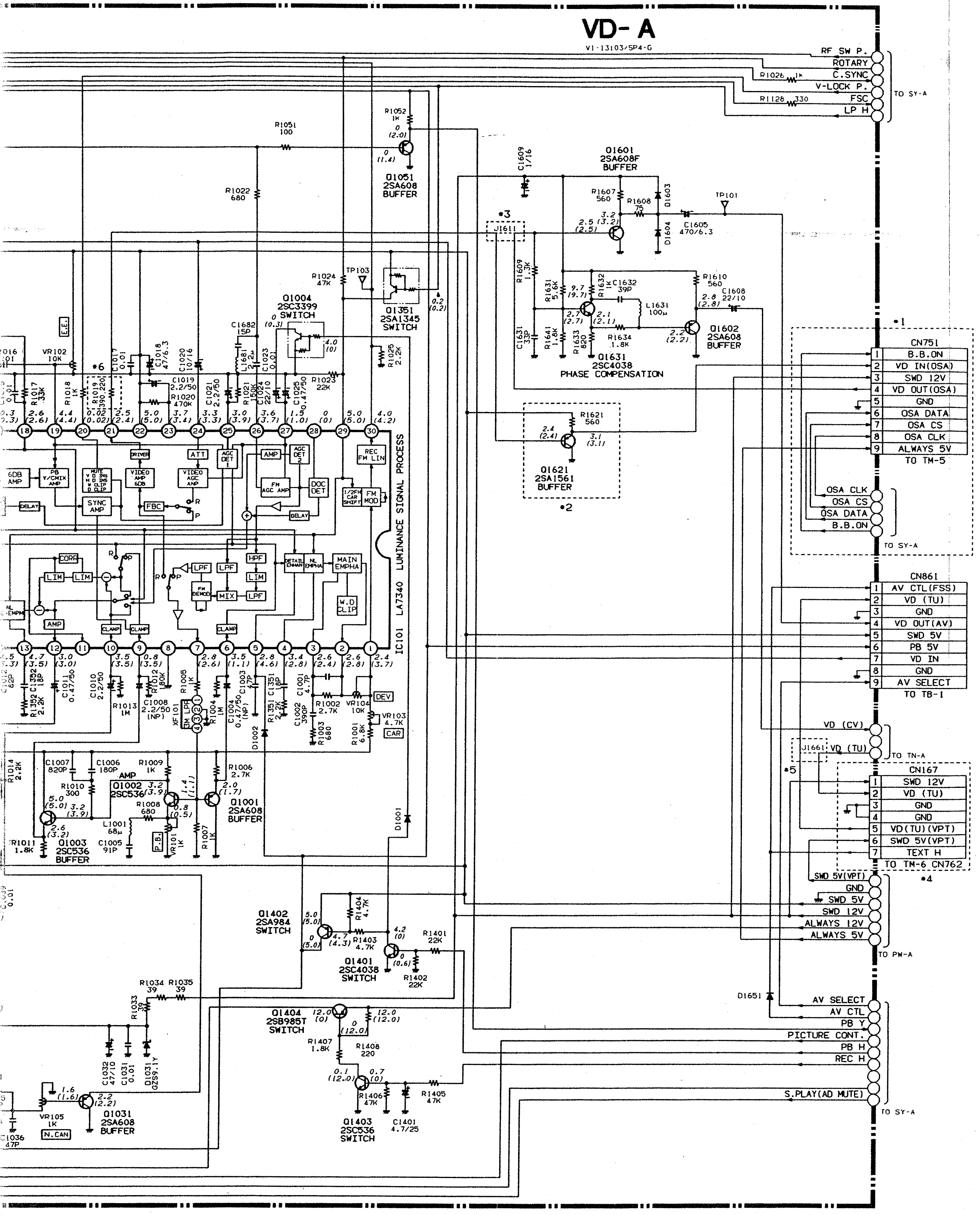
	*1	*2	*3	*4	*5	*6
	CN751, JW162	Q1621, R1621	J1611	R1019	CN167	J1661
FVH-P1400S FVH-P1400DK	USE	USE	NOT USE	390	NOT USE	USE
FVH-P1440S	NOT USE	NOT USE	USE	220	USE	NOT USE

• NOT SPECIFIED DIODE : GMA01 or 1SS133

VOLTAGE : REC (PLAY) MODE

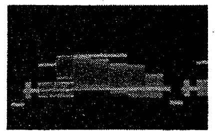
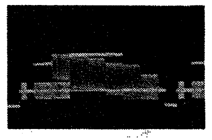
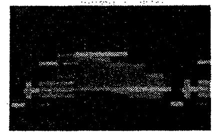
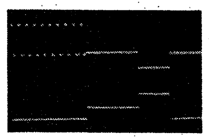
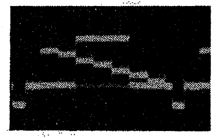
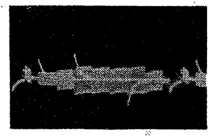
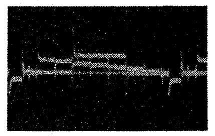
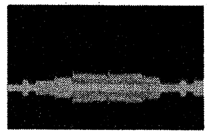
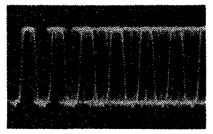
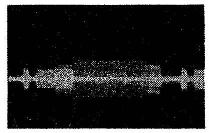
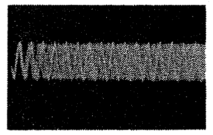
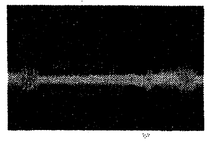
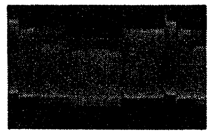
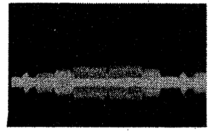
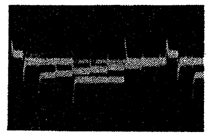
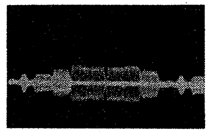
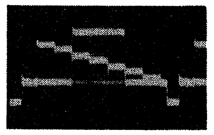
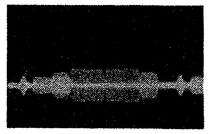
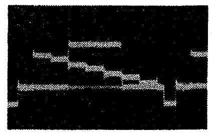
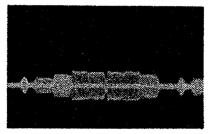
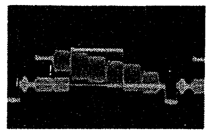
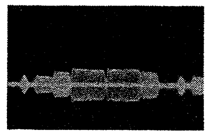


) VIDEO CIRCUIT DIAGRAM


VD- A
V1-13103/SP4-G
RF SW P.
ROTARY
C.SYNC
V-LOCK P.
FSC
LP H
TO SY-A
R1026 1K
R1128 330
R1051 100
R1052 1K
Q1051 2SA608 BUFFER
R1022 680
C1609 1/16
Q1601 2SA608F BUFFER
R1607 560
R1608 75
D1603
D1604
TP101
C1605 470/6.3
J1611
R1609 1.3K
R1631 5.6K
R1632 1K
C1632 39P
L1631 100µ
R1610 560
C1608 22/10
Q1602 2SA608 BUFFER
C1631 33P
R1641 1.8K
R1633 820
R1634 1.8K
Q1631 2SC4038 PHASE COMPENSATION
R1024 47K
TP103
Q1004 2SC3399 SWITCH
Q1351 2SA1345 SWITCH
R1025 2.2K
R1023 22K
VR102 10K
R1621 560
Q1621 2SA1561 BUFFER
CN751
B.B.ON
VD IN(OSA)
SWD 12V
VD OUT(OSA)
GND
OSA DATA
OSA CS
OSA CLK
ALWAYS 5V
TO TM-5
OSA CLK
OSA CS
OSA DATA
B.B.ON
TO SY-A
LUMINANCE SIGNAL PROCESS
IC101 LA7340
DRIVER
ATT
AGC DET
AMP
AGC DET
REC FM LIM
PB Y/C MIX AMP
VIDEO AGC AMP
FM AGC AMP
DOC DET
1/2FH CAR SHIFT
FM MOD
SYNC AMP
FBC
DELAY
CORE
LIM
LPF
HPF
MIX
FM DEMOD
DETAIL ENHAN
NL EMPHA
MAIN EMPHA
W.D CLIP
CLAMP
AMP
CN861
AV CTL(FSS)
VD (TU)
GND
VD OUT(AV)
SWD 5V
PB 5V
VD IN
GND
AV SELECT
TO TB-1
DEV
VR103 4.7K
CAR
VR104 10K
R1002 2.7K
Q1002 2SC536 AMP
Q1001 2SA608 BUFFER
Q1003 2SC536 BUFFER
R1006 2.7K
L1001 68µ
C1005 91P
D1001
D1002
VD (CV)
J1661
VD (TU)
TO TN-A
CN167
SWD 12V
VD (TU)
GND
GND
VD(TU)(VPT)
SWD 5V(VPT)
TEXT H
TO TM-6 CN762
SWD 5V(VPT)
GND
SWD 5V
SWD 12V
ALWAYS 12V
ALWAYS 5V
TO PW-A
Q1402 2SA984 SWITCH
R1404 4.7K
R1403 4.7K
Q1401 2SC4038 SWITCH
R1401 22K
R1402 22K
R1034
R1035
Q1404 2SB985T SWITCH
R1407 1.8K
R1408 220
D1651
AV SELECT
AV CTL
PB Y
PICTURE CONT.
PB H
REC H
S.PLAY(AD MUTE)
TO SY-A
R1406 47K
R1405 47K
Q1403 2SC536 SWITCH
C1401 4.7/25
Q1031 2SA608 BUFFER
VR105 1K
N.CAN
C1036 47P

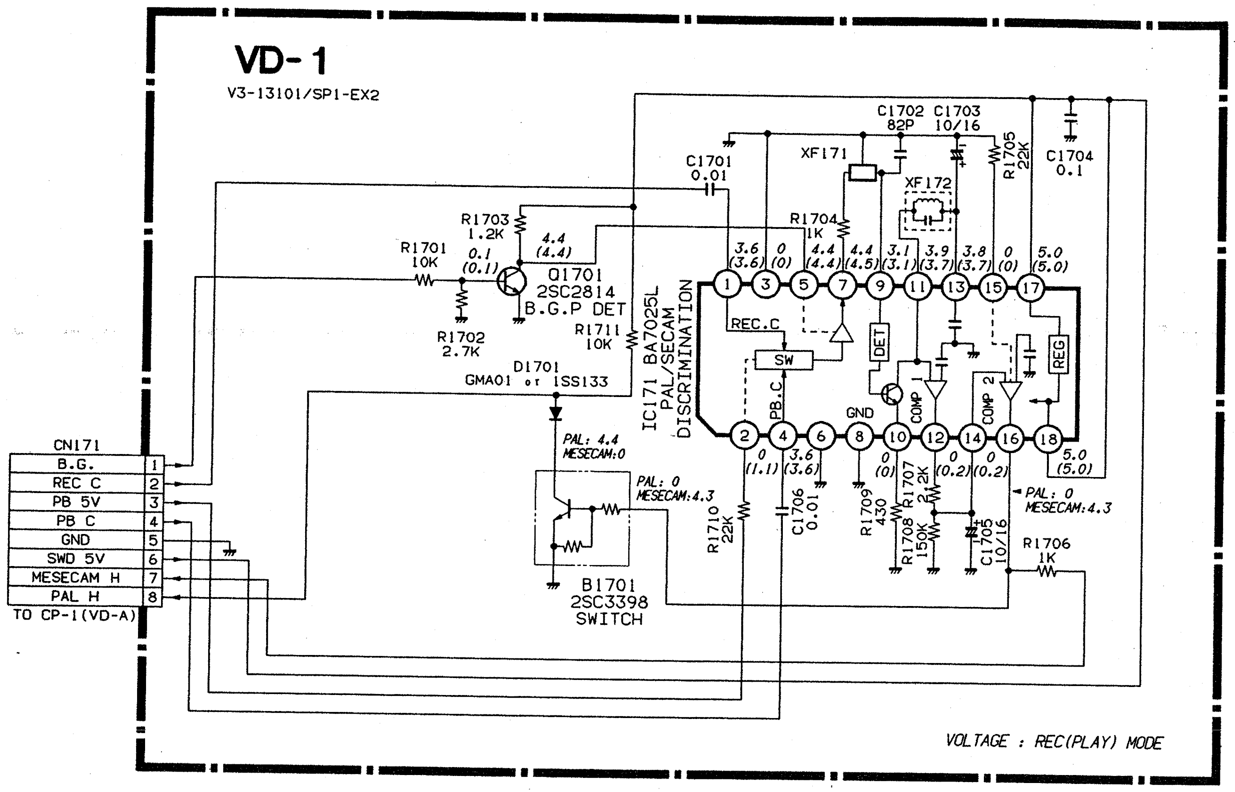
WAVEFORM OF VIDEO

WF-V-SP

TEST LOCATION	WAVEFORM	MODE/LEVEL	TEST LOCATION	WAVEFORM	MODE/LEVEL
IC101 Pin 24		REC, EE 1 Vp-p	IC101 Pin 21		REC, EE 2 Vp-p
IC101 Pin 7		REC, EE 1 Vp-p	IC101 (UPPER) Pin 21 (LOWER) Pin 20		STILL (UPPER) 2 Vp-p (LOWER) 5 Vp-p
IC101 Pin 6		REC, EE 0.45 Vp-p	IC111 Pin 21		REC, EE 1 Vp-p
IC101 Pin 2		REC, EE 1.3 Vp-p	IC111 Pin 3		REC, EE 0.14 Vp-p
IC101 Pin 30		REC, EE 1.5 Vp-p	IC111 Pin 9		REC, EE 0.8Vp-p
IC101 Pin 26		PB 0.8 Vp-p	Q1105 Base		PB 0.1 Vp-p
IC101 Pin 7		PB 2.0 Vp-p	Q1106 Emitter		PB 1.2 Vp-p
Q1002 Base		PB 0.5 Vp-p	IC111 Pin 7		PB 0.5 Vp-p
IC101 Pin 9		PB 0.6 Vp-p	IC111 Pin 5		PB 1.2 Vp-p
IC101 Pins 10/12		PB 0.5 Vp-p	IC111 Pin 24		PB 0.22 Vp-p
IC101 Pin 21		PB 2 Vp-p	IC111 Pin 23		PB 0.6 Vp-p

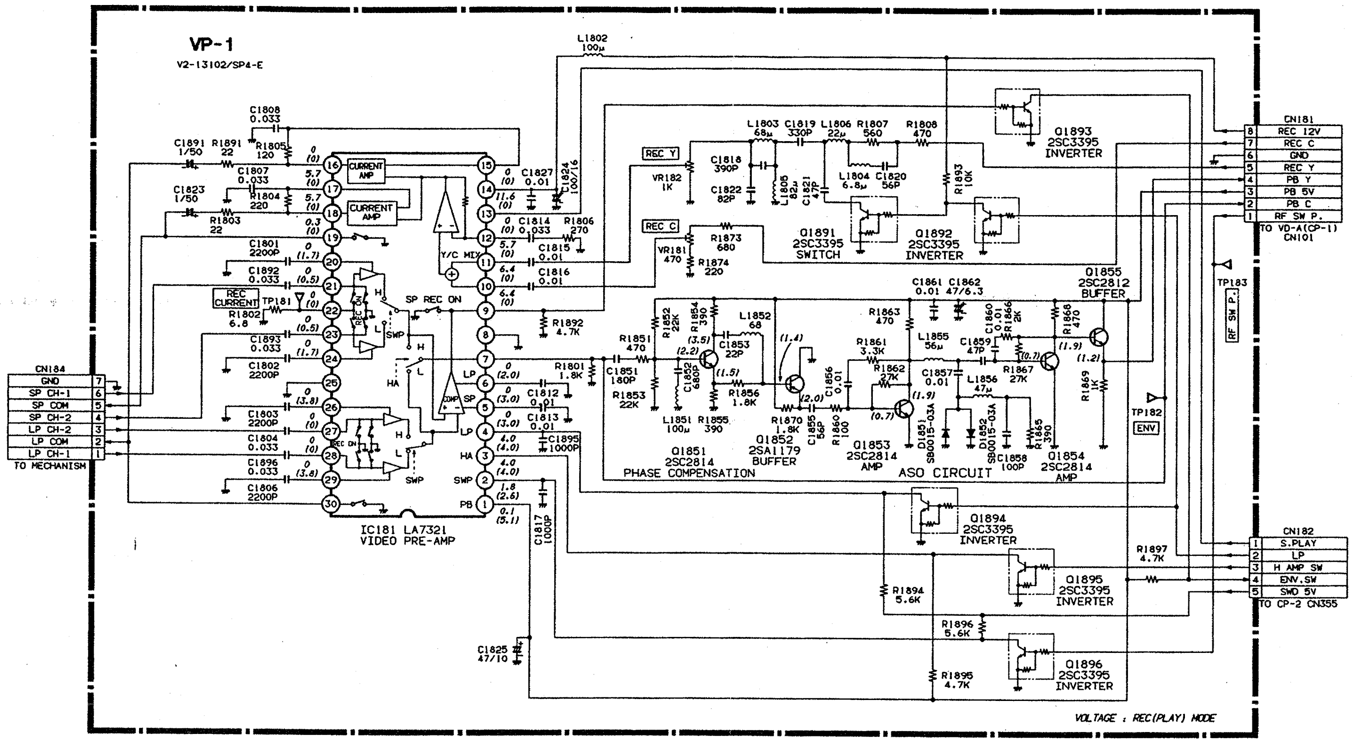
K
J
I
H
G
F
E
D
C
B
A

VD-1 BOARD MESECAM DISCRIMINATION CIRCUIT DIAGRAM

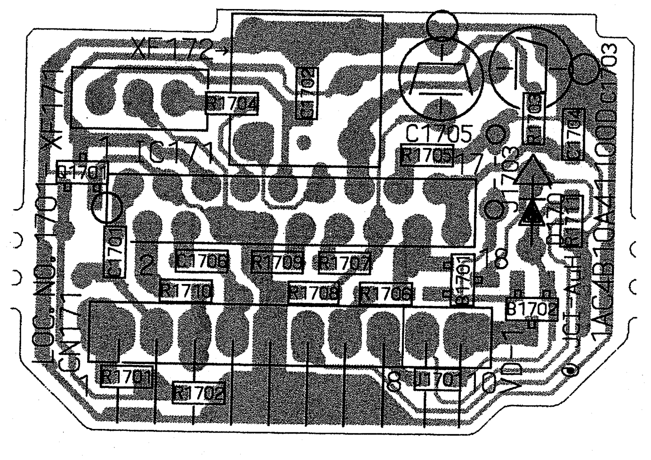

VD-1
V3-13101/SP1-EX2
CN171
B.G.
REC C
PB 5V
PB C
GND
SWD 5V
MESECAM H
PAL H
TO CP-1(VD-A)
R1701 10K
R1702 2.7K
R1703 1.2K
Q1701 2SC2814 B.G.P DET
D1701 GMA01 or 1SS133
R1711 10K
IC171 BA7025L PAL/SECAM DISCRIMINATION
XF171
XF172
C1701 0.01
C1702 82P
C1703 10/16
C1704 0.1
R1704 1K
R1705 22K
C1705 10/16
C1706 0.01
R1706 1K
R1707 2.2K
R1708 150K
R1709 430
R1710 22K
B1701 2SC3398 SWITCH
REC.C
SW
PB.C
DET
COMP 1
COMP 2
REG
GND
PAL: 4.4
MESECAM: 0
PAL: 0
MESECAM: 4.3
VOLTAGE : REC(PLAY) MODE

VP-1 BOARD VIDEO PRE-AMP CIRCUIT DIAGRAM

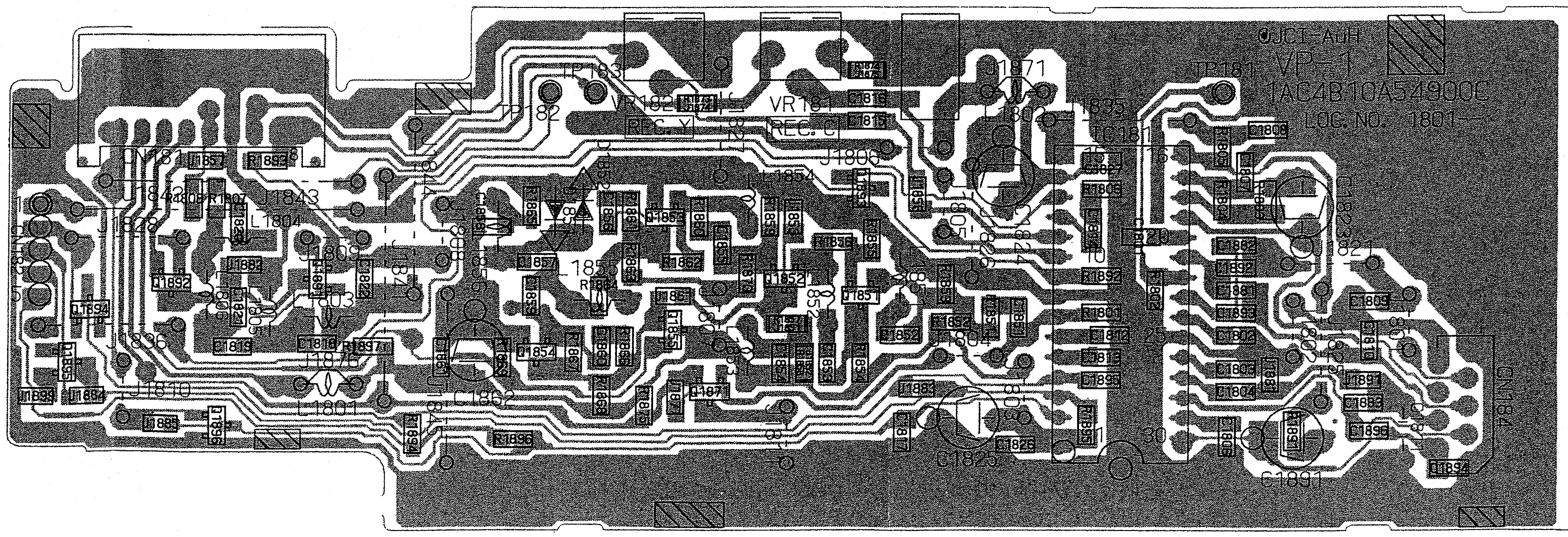
TM-5 I


VP-1
V2-13102/SP4-E
CN184
GND
SP CH-1
SP COM
SP CH-2
LP CH-2
LP COM
LP CH-1
TO MECHANISM
IC181 LA7321 VIDEO PRE-AMP
CURRENT AMP
Y/C MIX
SP REC ON
REC CURRENT
TP181
TP182
TP183
ENV
RF SW P.
REC Y
REC C
VR181 470
VR182 1K
Q1851 2SC2814 PHASE COMPENSATION
Q1852 2SA1179 BUFFER
Q1853 2SC2814 AMP
Q1854 2SC2814 AMP
Q1855 2SC2812 BUFFER
ASO CIRCUIT
Q1891 2SC3395 SWITCH
Q1892 2SC3395 INVERTER
Q1893 2SC3395 INVERTER
Q1894 2SC3395 INVERTER
Q1895 2SC3395 INVERTER
Q1896 2SC3395 INVERTER
CN181
REC 12V
REC C
GND
REC Y
PB Y
PB 5V
PB C
RF SW P.
TO VD-A(CP-1) CN101
CN182
S.PLAY
LP
H AMP SW
ENV.SW
SWD 5V
TO CP-2 CN355
L1802 100μ
VOLTAGE : REC(PLAY) MODE

VD-1 P.C.B.


XF172
XF171
IC171
C1705
R1705
R1704
C1702
C1701
C1703
C1704
C1706
R1709
R1707
R1708
R1706
R1710
R1703
Q1701
D1701
B1701
R1701
R1702
CN171
LOC NO. 1701
1AC4B10A11
JCI-AUH

VP-1 P.C.B.


JCI-AUH
VP-1
1AC4B10A54900C
LOG NO. 1801
TP181
TP182
TP183
VR182
VR181
REC. Y
REC. C
CN181
CN182
CN184
IC181
C1825
C1891
L1801

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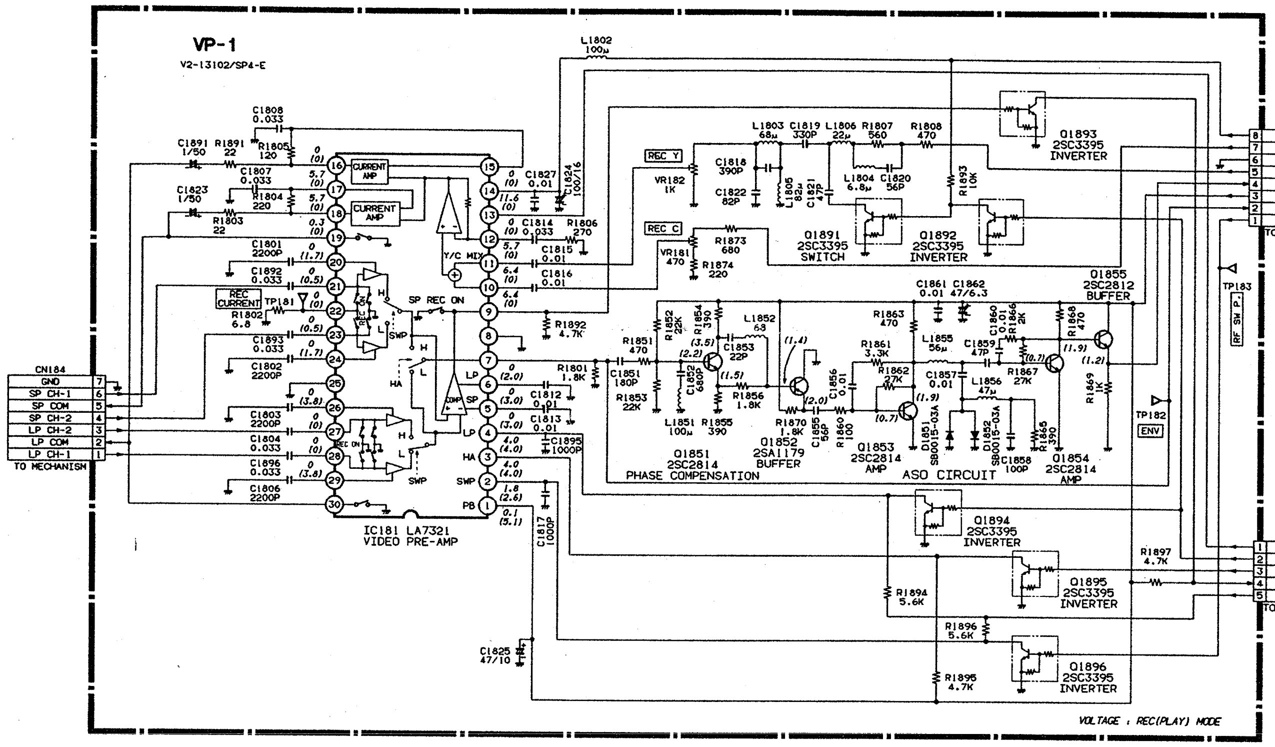
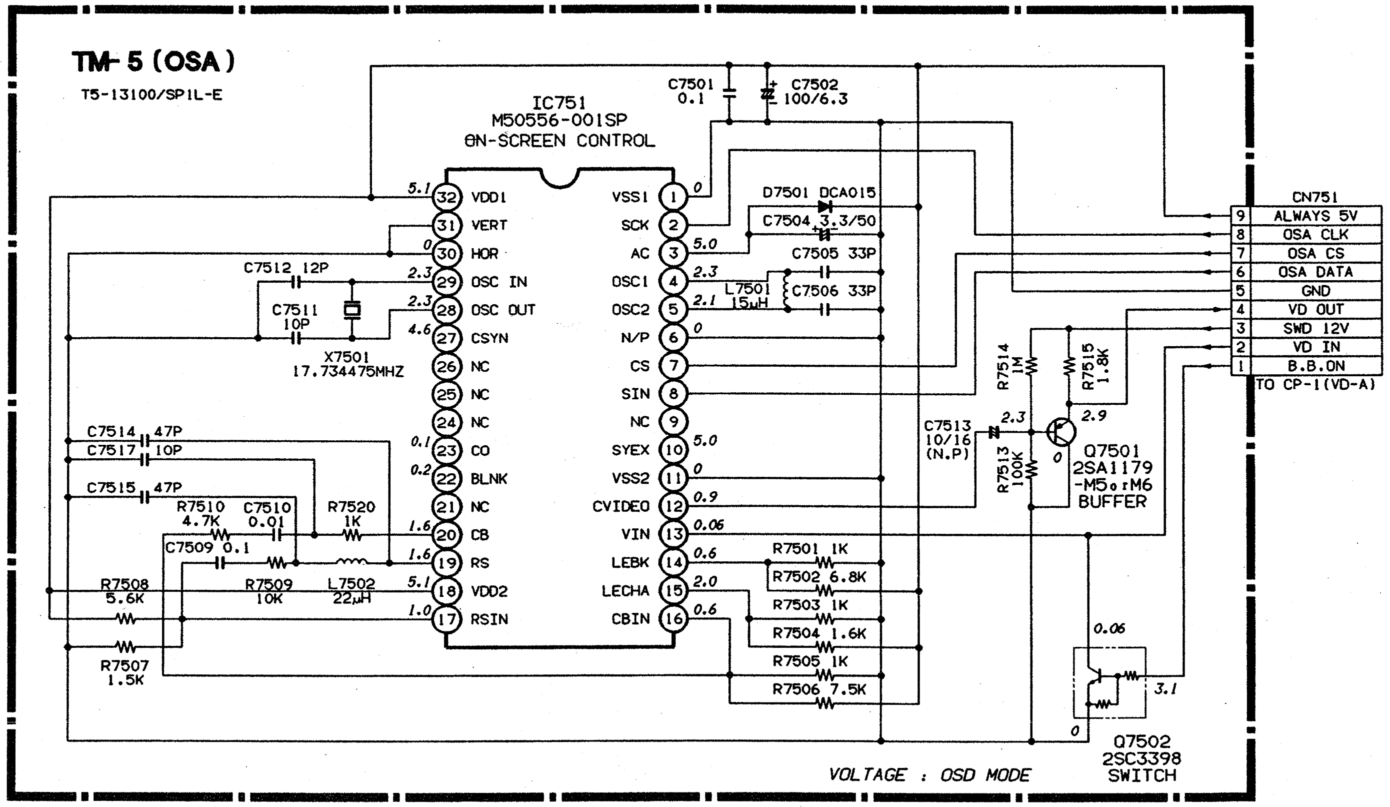
16

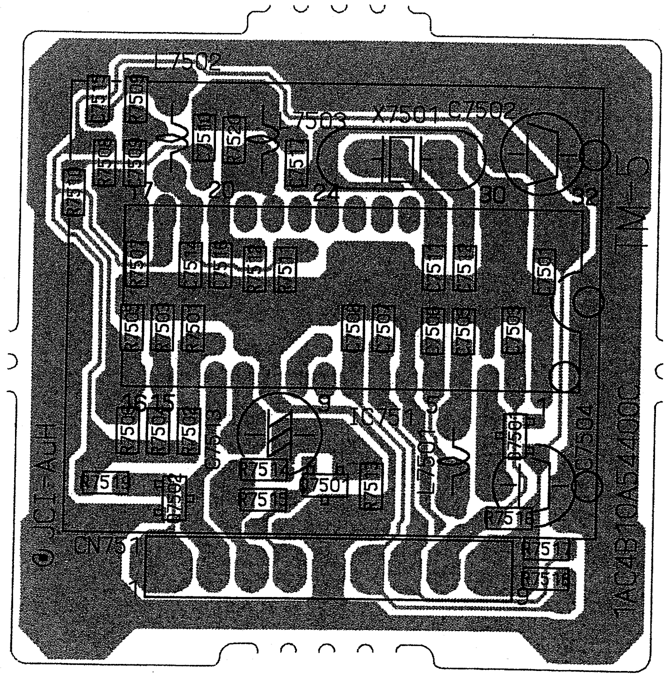
VP-1 BOARD VIDEO PRE-AMP CIRCUIT DIAGRAM


VP-1
V2-13102/SP4-E
CN184
GND
SP CH-1
SP COM
SP CH-2
LP CH-2
LP COM
LP CH-1
TO MECHANISM
IC181 LA7321
VIDEO PRE-AMP
CURRENT AMP
T/C MIX
SP REC ON
REC Y
REC C
VR182 1K
VR181 470
Q1891 2SC3395 SWITCH
Q1892 2SC3395 INVERTER
Q1893 2SC3395 INVERTER
Q1851 2SC2814 PHASE COMPENSATION
Q1852 2SA1179 BUFFER
Q1853 2SC2814 AMP
ASO CIRCUIT
Q1854 2SC2814 AMP
Q1855 2SC2812 BUFFER
Q1894 2SC3395 INVERTER
Q1895 2SC3395 INVERTER
Q1896 2SC3395 INVERTER
CN181
REC 12V
REC C
GND
REC Y
PB Y
PB 5V
PB C
RF SW P.
TO VD-A(CP-1) CN101
TP183
TP182
ENV
CN182
S.PLAY
LP
H AMP SW
ENV.SW
SWD 5V
TO CP-2 CN355
VOLTAGE : REC(PLAY) MODE

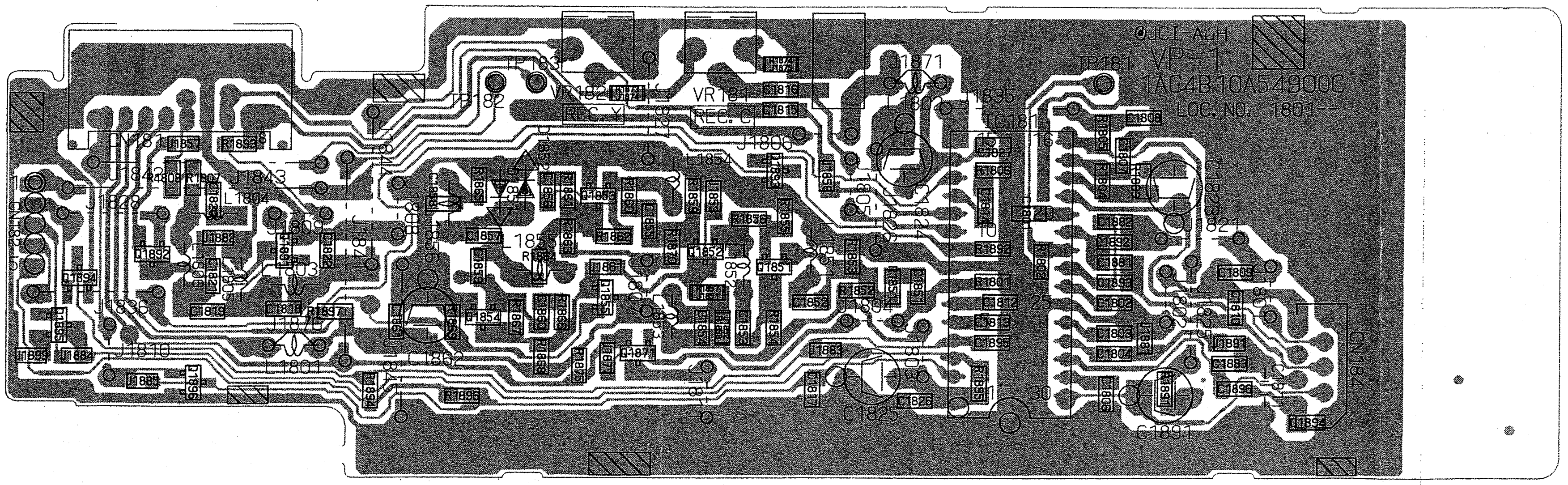
TM-5 BOARD TIMER ON-SCREEN (OSA) CIRCUIT DIAGRAM (EXCEPT MODEL FVH-P1440S)


TM-5 (OSA)
T5-13100/SP1L-E
IC751
M50556-001SP
ON-SCREEN CONTROL
C7501 0.1
C7502 100/6.3
VDD1
VERT
HOR
OSC IN
OSC OUT
CSYN
NC
CO
BLNK
CB
RS
VDD2
RSIN
VSS1
SCK
AC
OSC1
OSC2
N/P
CS
SIN
SYEX
VSS2
CVIDEO
VIN
LEBK
LECHA
CBIN
D7501 DCA015
C7504 3.3/50
C7505 33P
C7506 33P
L7501 15μH
C7512 12P
C7511 10P
X7501 17.734475MHZ
C7514 47P
C7517 10P
C7515 47P
R7510 4.7K
C7510 0.01
R7520 1K
C7509 0.1
R7508 5.6K
R7509 10K
L7502 22μH
R7507 1.5K
R7501 1K
R7502 6.8K
R7503 1K
R7504 1.6K
R7505 1K
R7506 7.5K
R7514 1M
R7515 1.8K
C7513 10/16 (N.P)
R7513 100K
Q7501 2SA1179 -M5 or M6 BUFFER
Q7502 2SC3398 SWITCH
CN751
ALWAYS 5V
OSA CLK
OSA CS
OSA DATA
GND
VD OUT
SWD 12V
VD IN
B.B.ON
TO CP-1(VD-A)
VOLTAGE : OSD MODE

TM-5 P.C.B.

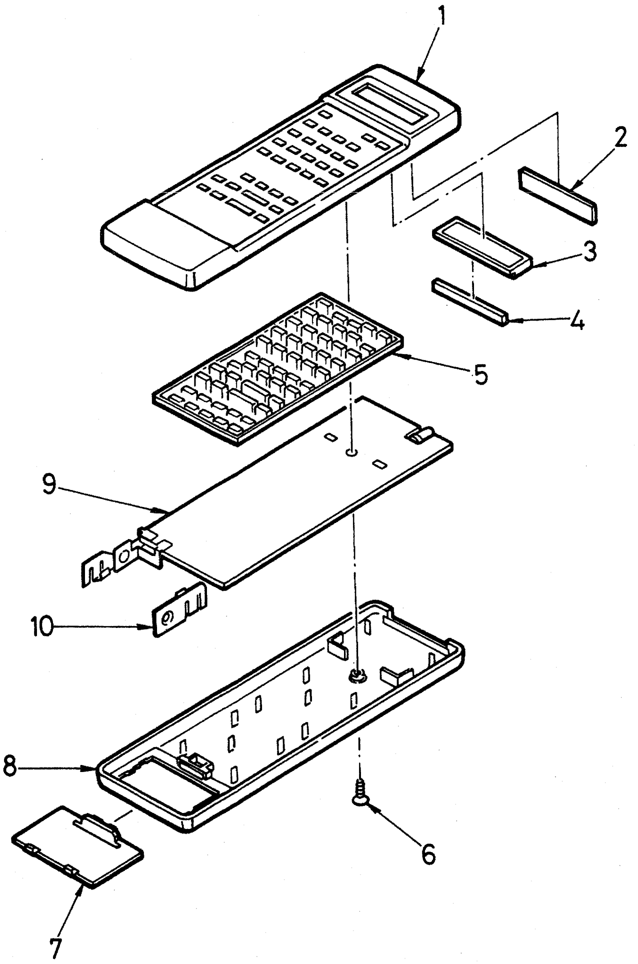


VP-1 P.C.B.


VP-1
1AC4B10A54900C

REMOCON

LOCATION	PARTS NO.	DESCRIPTION
COMPL.NO.	613 125 4299	(FVH-P1400S,DK)
COMPL.NO.	613 124 0476	(FVH-P1440S)
1	613 125 5982	ASSY,CABINET,TOP(FVH-P1400S,DK)
OR	613 124 2753	ASSY,CABINET,TOP(FVH-P1440S)
2	613 122 5305	WINDOW
3	613 123 1979	LCD
4	613 123 1931	CONNECTOR
5	613 122 5398	BUTTON(FVH-P1400S,DK)
OR	613 122 5411	BUTTON(FVH-P1440S)
6	411 101 7308	SCR S-TPG FLT 2.6X10
7	613 122 5220	LID,BATTERY
8	613 122 5213	CABINET,BOTTOM
9	613 122 4940	COMPL PCB,RM-1
10	613 123 1962	TERMINAL,BATTERY



COMPL PCB,RM-1

LOCATION	PARTS NO.	DESCRIPTION
COMPL.NO.	613 122 4940	
	613 123 1948	TERMINAL,BATTERY,+
	613 123 1955	TERMINAL,BATTERY,-
C1	403 068 0409	CERAMIC 0.1U Z 25V
C2	403 152 9707	ELECT 22U M 6.3V
C3	403 009 9300	CERAMIC 100P K 50V
C4	403 009 9300	CERAMIC 100P K 50V
C5	403 068 0409	CERAMIC 0.1U Z 25V
C6	403 068 0409	CERAMIC 0.1U Z 25V
C7	403 153 0802	ELECT 220U M 4V
IC1	409 245 3003	IC LC5872-S-1275
OR	409 246 8205	IC LC5872-S-1300
J1	401 035 4108	MT-GLAZE 0.000 ZA 1/8W
LED1	407 040 3709	LED SLR-932A
Q1	405 021 2406	TR 2SD1048-X7-TB
OR	405 021 2505	TR 2SD1048-X8-TB
R1	401 035 4603	MT-GLAZE 100 JA 1/8W
R2	401 169 5200	MT-GLAZE 2.2 JA 1/4W
R3	401 035 4603	MT-GLAZE 100 JA 1/8W
R4	401 037 5806	MT-GLAZE 1M JA 1/10W
R5	401 039 0601	MT-GLAZE 820K JA 1/10W
X1	613 123 2020	RESONATOR,CERAMIC1.216MHZ

FVH-P1400S
FVH-P1440S
FVH-P1400DK

BLOCK DIAGRAMS, CIRCUIT DIAGRAMS & PRINTED CIRCUIT BOARDS

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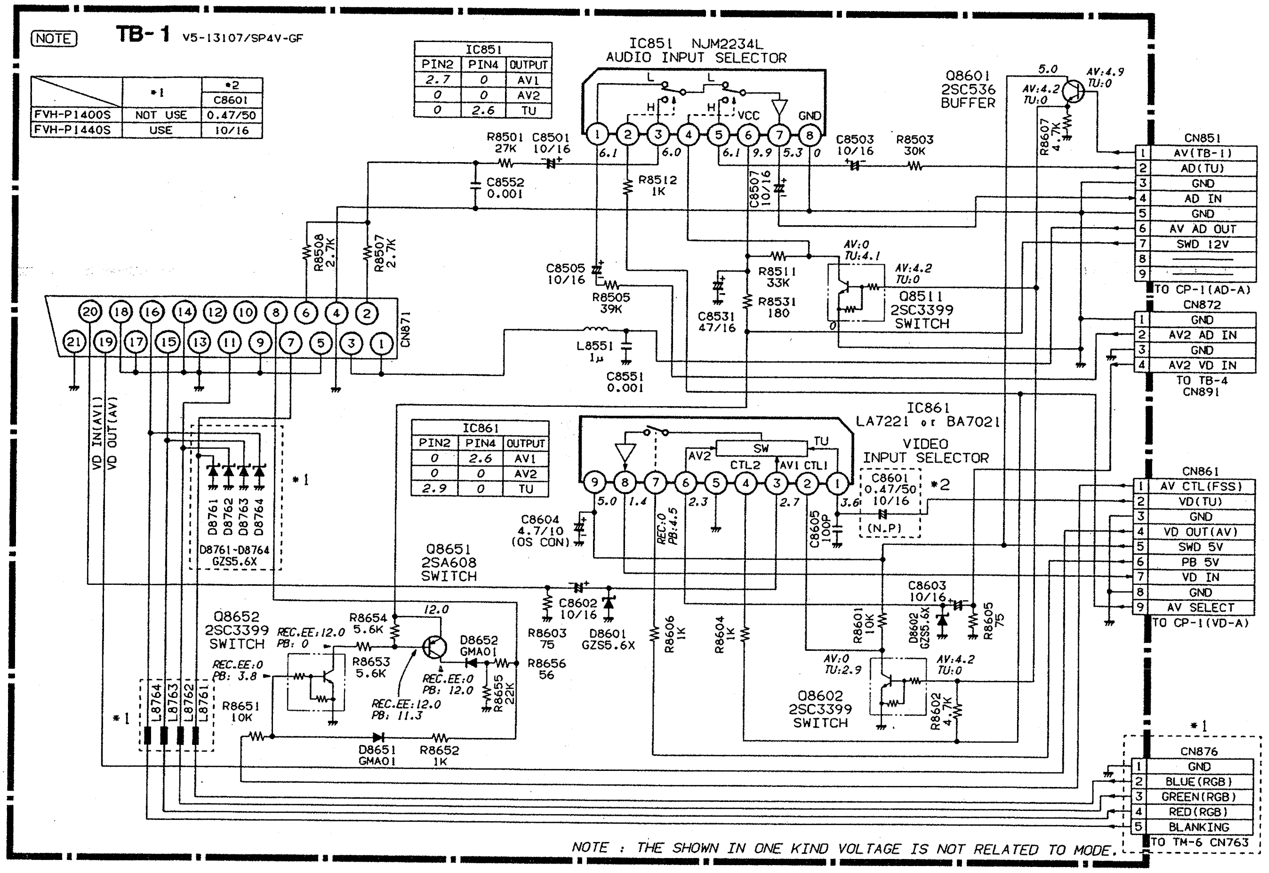
IC301 SYSTEM CONTROL/TIMER/TUNING CONTROL MPU PIN FUNCTIONS TABLE (FVH-P1400DK) .. 55

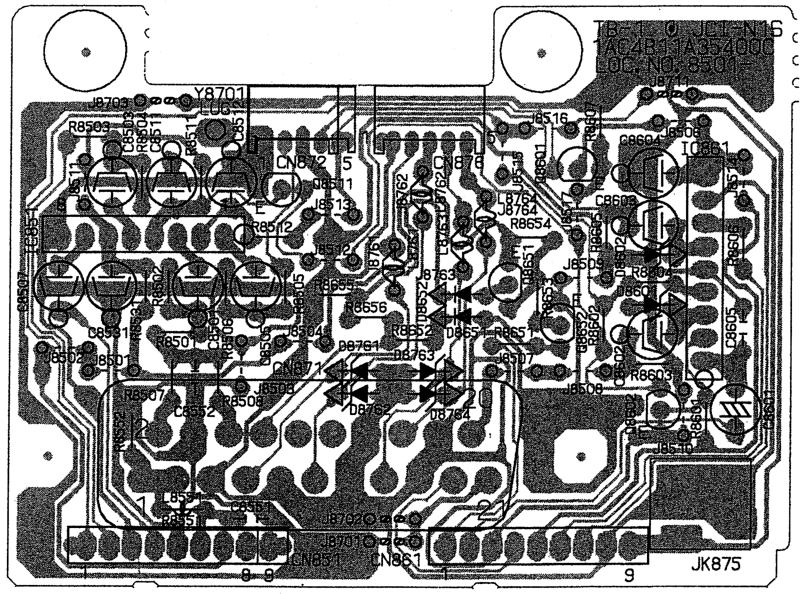
REFERENCE NO. WM-530894

SP4/EXF, SPF, EEF, SP4V/EXF, SPF 15H

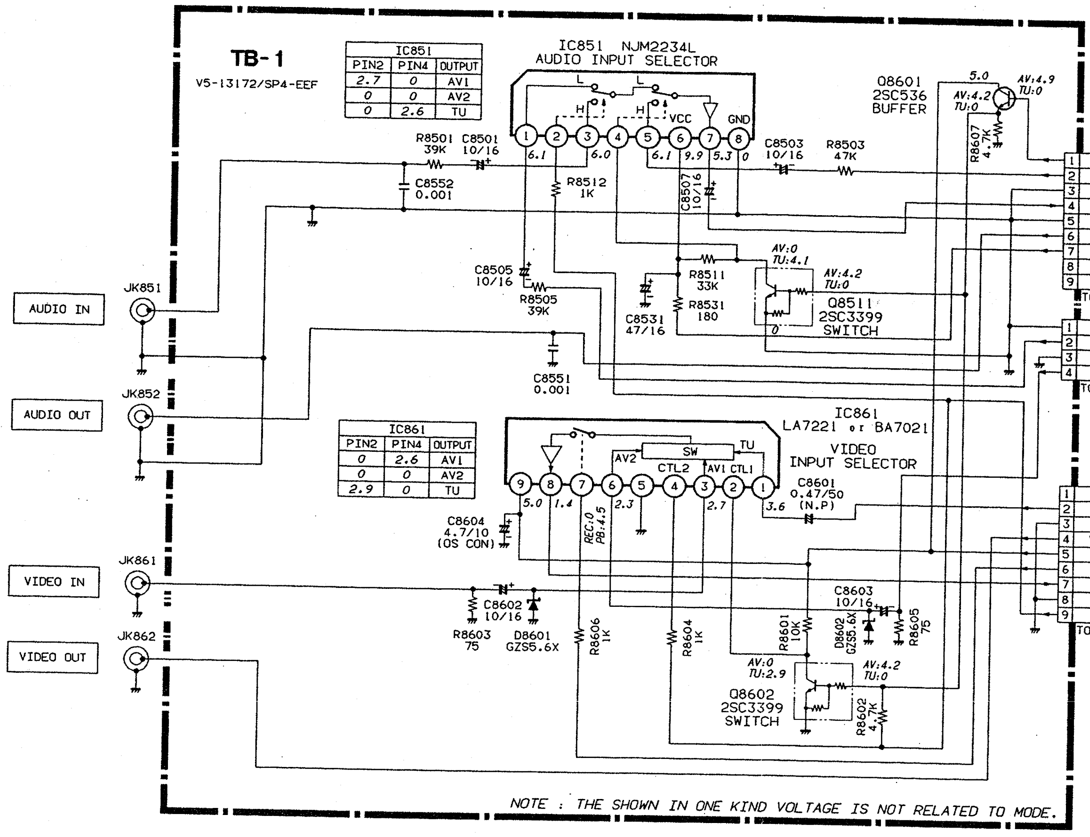
TB-1 BOARD INPUT/OUTPUT SELECTION & TERMINAL CIRCUIT DIAGRAM
(FVH-P1400S & FVH-P1440S)


NOTE
TB-1 V5-13107/SP4V-GF
FVH-P1400S NOT USE 0.47/50
FVH-P1440S USE 10/16
*1
*2
C8601
IC851 NJM2234L
AUDIO INPUT SELECTOR
Q8601 2SC536 BUFFER
CN851
AV(TB-1)
AD(TU)
GND
AD IN
AV AD OUT
SWD 12V
TO CP-1(AD-A)
CN872
AV2 AD IN
AV2 VD IN
TO TB-4 CN891
CN871
VD IN(AV1)
VD OUT(AV1)
D8761-D8764 GZS5.6X
Q8511 2SC3399 SWITCH
IC861 LA7221 or BA7021
VIDEO INPUT SELECTOR
Q8651 2SA608 SWITCH
Q8652 2SC3399 SWITCH
CN861
AV CTL(FSS)
VD(TU)
VD OUT(AV)
SWD 5V
PB 5V
VD IN
AV SELECT
TO CP-1(VD-A)
Q8602 2SC3399 SWITCH
D8601 GZS5.6X
D8651 GMA01
D8652 GMA01
CN876
BLUE(RGB)
GREEN(RGB)
RED(RGB)
BLANKING
TO TM-6 CN763
NOTE : THE SHOWN IN ONE KIND VOLTAGE IS NOT RELATED TO MODE.

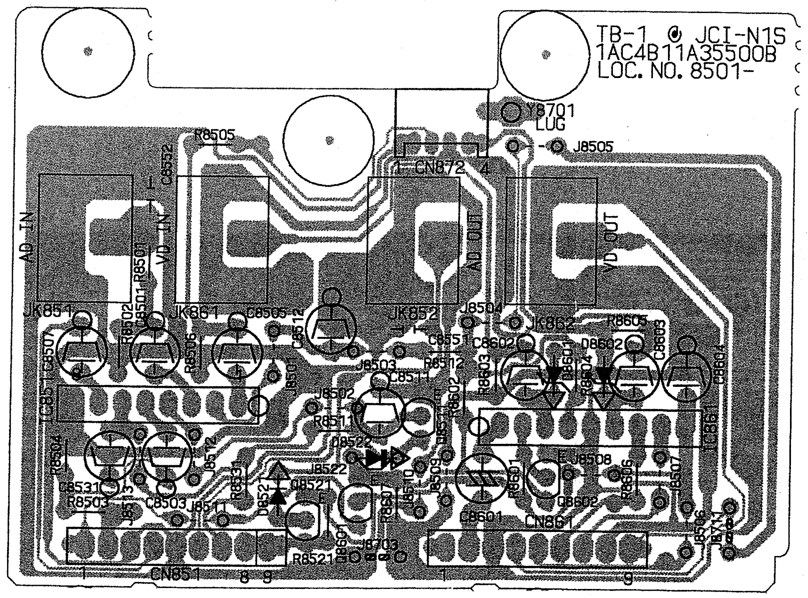
TB-1 P.C.B.

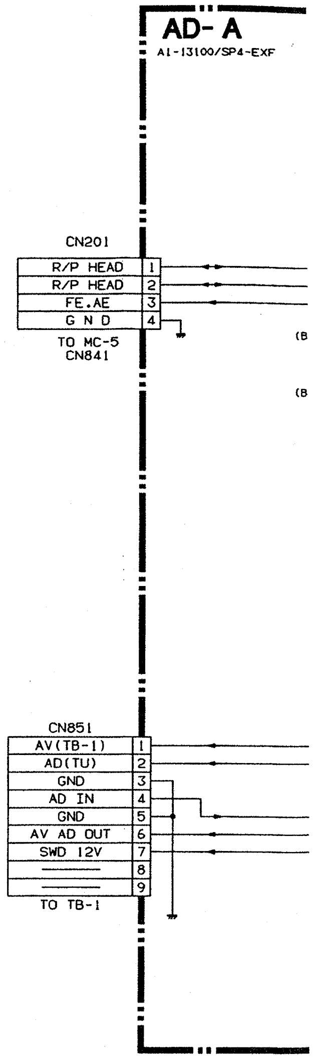

TB-1 @ JCI-N1S
1AC4B11A35400C
LOC.NO.8501-
Y8701
CN872
CN876
CN851
CN861
JK875
IC851
IC861

TB-1 BOARD INPUT/OUTPUT SELECTION & TERMINAL CIRCUIT DIAGRAM
(FVH-P1400DK)

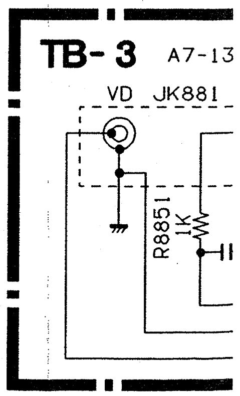

TB-1
V5-13172/SP4-EEF
IC851 NJM2234L
AUDIO INPUT SELECTOR
Q8601 2SC536 BUFFER
CN851
AV(TB-1)
AD(TU)
GND
AD IN
AV AD OUT
SWD 12V
TO CP-1(AD-A)
CN872
AV2 AD IN
AV2 VD IN
TO TB-4 CN891
AUDIO IN
AUDIO OUT
VIDEO IN
VIDEO OUT
JK851
JK852
JK861
JK862
Q8511 2SC3399 SWITCH
IC861 LA7221 or BA7021
VIDEO INPUT SELECTOR
CN861
VD(TU)
VD OUT(AV)
SWD 5V
PB 5V
VD IN
AV SELECT
TO CP-1(VD-A)
Q8602 2SC3399 SWITCH
D8601 GZS5.6X
NOTE : THE SHOWN IN ONE KIND VOLTAGE IS NOT RELATED TO MODE.

TB-1 P.C.B.

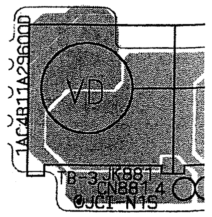

TB-1 @ JCI-N1S
1AC4B11A35500B
LOC. NO. 8501-
Y8701
LUG
AD IN
VD IN
AD OUT
VD OUT
JK851
JK861
JK852
JK862
CN872
CN851
CN861


AD-A
A1-13100/SP4-EXF
CN201
R/P HEAD
R/P HEAD
FE.AE
G N D
TO MC-5 CN841
CN851
AV(TB-1)
AD(TU)
GND
AD IN
GND
AV AD OUT
SWD 12V
TO TB-1

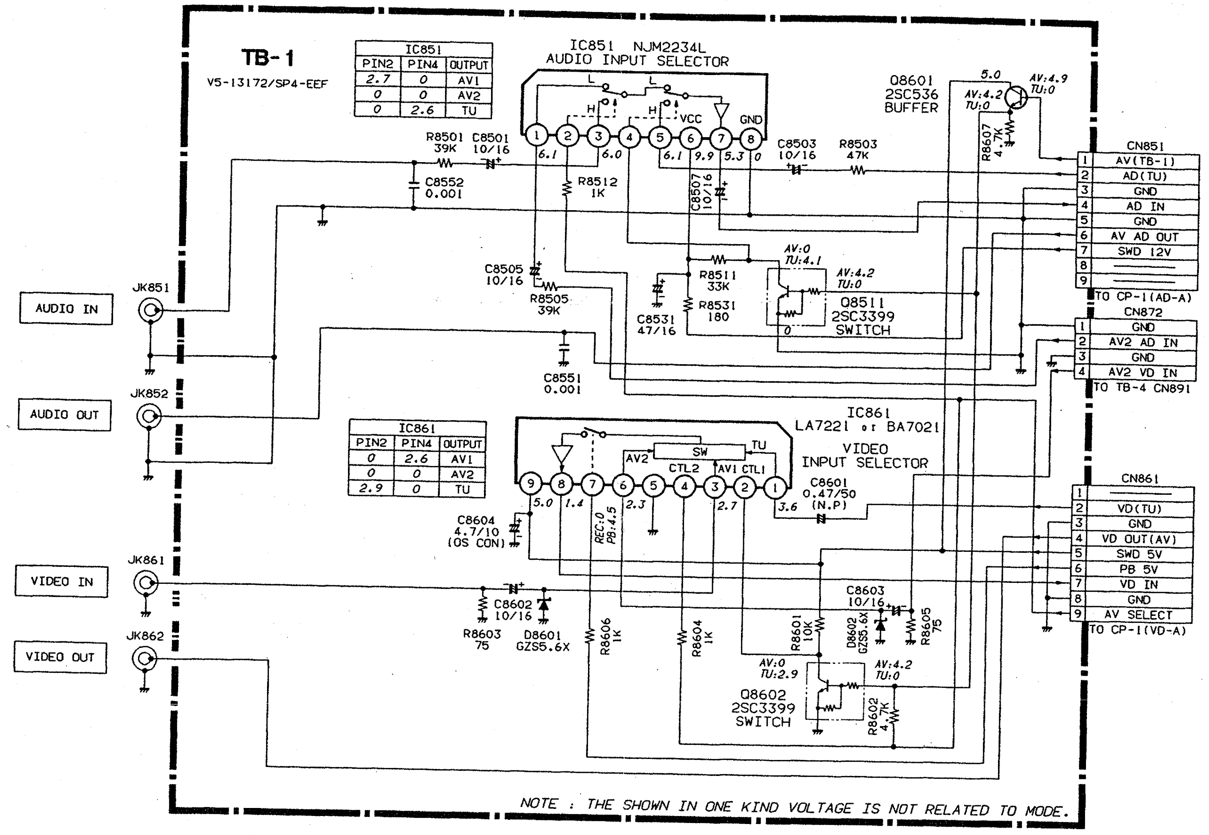
TB-3 BOARD TE


TB-3 A7-13
VD JK881
R8851 1K

TB-3 P


VD
TB-3 JK881
CN881
@JCI-N1S

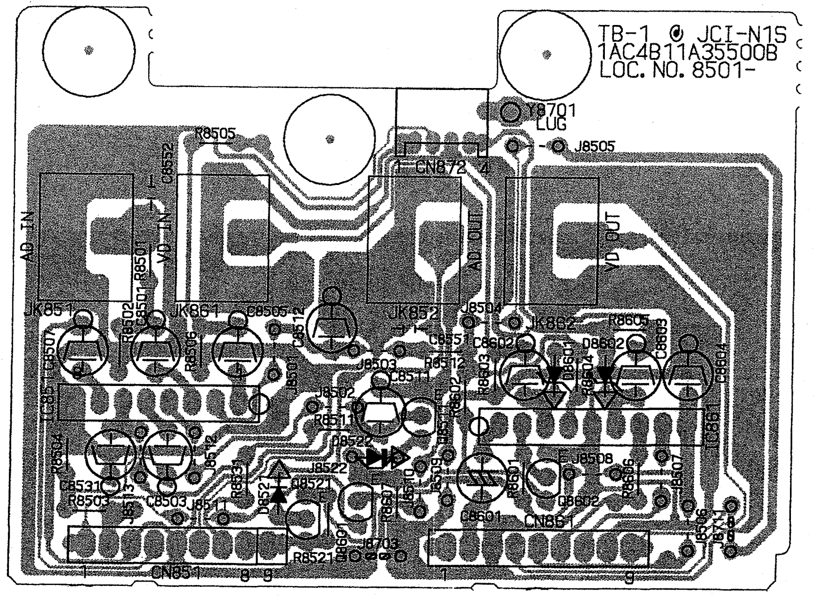
TB-1 BOARD INPUT/OUTPUT SELECTION & TERMINAL CIRCUIT DIAGRAM (FVH-P1400DK)


TB-1
V5-13172/SP4-EEF
IC851 NJM2234L
AUDIO INPUT SELECTOR
Q8601
2SC536
BUFFER
IC861
LA7221 or BA7021
VIDEO
INPUT SELECTOR
Q8511
2SC3399
SWITCH
Q8602
2SC3399
SWITCH
AUDIO IN
AUDIO OUT
VIDEO IN
VIDEO OUT
JK851
JK852
JK861
JK862
CN851
AV(TB-1)
AD(TU)
GND
AD IN
GND
AV AD OUT
SWD 12V
TO CP-1(AD-A)
CN872
GND
AV2 AD IN
GND
AV2 VD IN
TO TB-4 CN891
CN861
VD(TU)
GND
VD OUT(AV)
SWD 5V
PB 5V
VD IN
GND
AV SELECT
TO CP-1(VD-A)
R8501 39K
C8501 10/16
C8552 0.001
R8512 1K
C8503 10/16
R8503 47K
C8505 10/16
R8505 39K
R8511 33K
R8531 180
C8531 47/16
C8551 0.001
R8607 4.7K
C8604 4.7/10 (OS CON)
C8601 0.47/50 (N.P)
C8602 10/16
C8603 10/16
R8603 75
D8601 GZS5.6X
R8606 1K
R8604 1K
R8601 10K
D8602 GZS5.6X
R8602 4.7K
R8605 75
NOTE : THE SHOWN IN ONE KIND VOLTAGE IS NOT RELATED TO MODE.

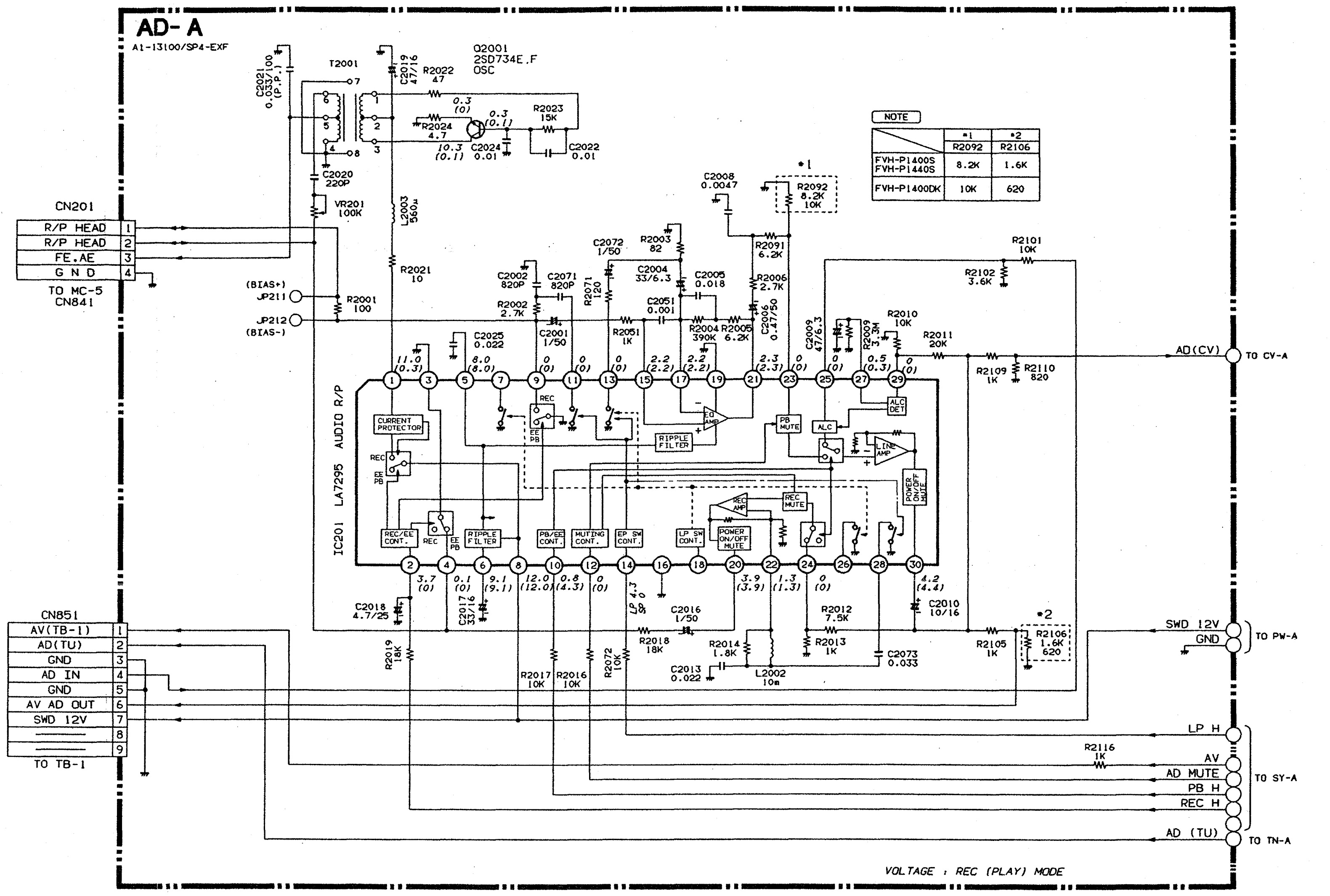
IC851		
PIN2	PIN4	OUTPUT
2.7	0	AV1
0	0	AV2
0	2.6	TU

IC861		
PIN2	PIN4	OUTPUT
0	2.6	AV1
0	0	AV2
2.9	0	TU

TB-1 P.C.B.


TB-1 JCI-N1S
1AC4B11A35500B
LOC. NO. 8501-
AD IN
VD IN
AD OUT
VD OUT
CN872
CN851
CN861
IC851
IC861
JK851
JK852
JK861
JK862

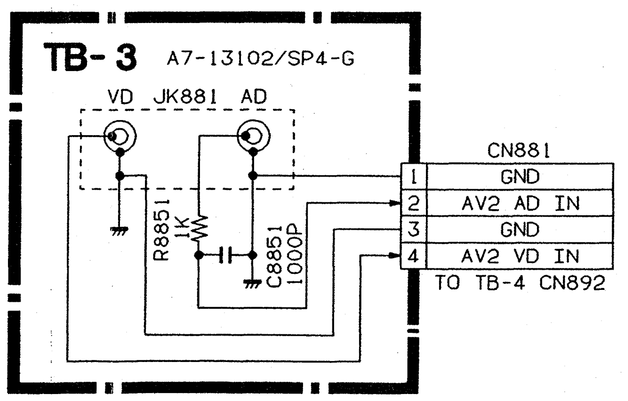
CP-1 BOARD (AD-A) AUDIO CIRCUIT DIAGRAM


AD-A
A1-13100/SP4-EXF
T2001
Q2001
2SD734E.F
OSC
IC201 LA7295 AUDIO R/P
CN201
R/P HEAD
R/P HEAD
FE.AE
GND
TO MC-5
CN841
(BIAS+)
JP211
JP212
(BIAS-)
CN851
AV(TB-1)
AD(TU)
GND
AD IN
GND
AV AD OUT
SWD 12V
TO TB-1
AD(CV)
TO CV-A
SWD 12V
GND
TO PW-A
LP H
AV
AD MUTE
PB H
REC H
TO SY-A
AD (TU)
TO TN-A
CURRENT PROTECTOR
RIPPLE FILTER
ALC
LINE AMP
PB MUTE
REC MUTE
POWER ON/OFF MUTE
VOLTAGE : REC (PLAY) MODE

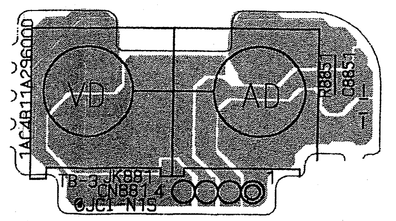
NOTE

	*1	*2
	R2092	R2106
FVH-P1400S FVH-P1440S	8.2K	1.6K
FVH-P1400DK	10K	620

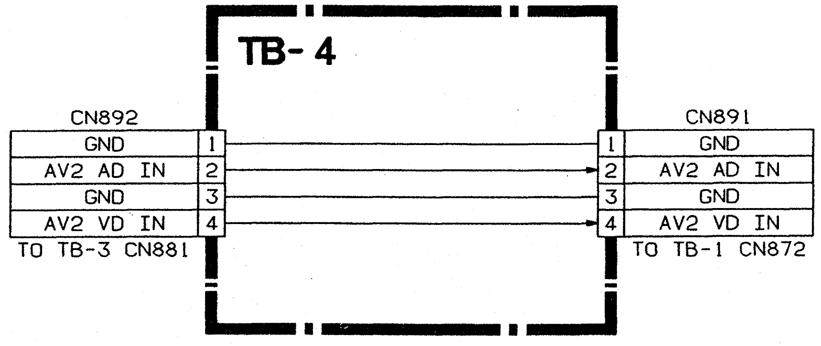
TB-3 BOARD TERMINAL CIRCUIT DIAGRAM


TB-3
A7-13102/SP4-G
VD JK881 AD
R8851 1K
C8851 1000P
CN881
1 GND
2 AV2 AD IN
3 GND
4 AV2 VD IN
TO TB-4 CN892

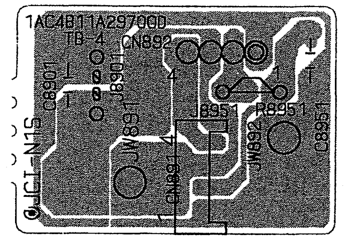
TB-3 P.C.B.


VD
AD
1AC4B11A29800D
TB-3 JK881
CN881
JCI-N1S

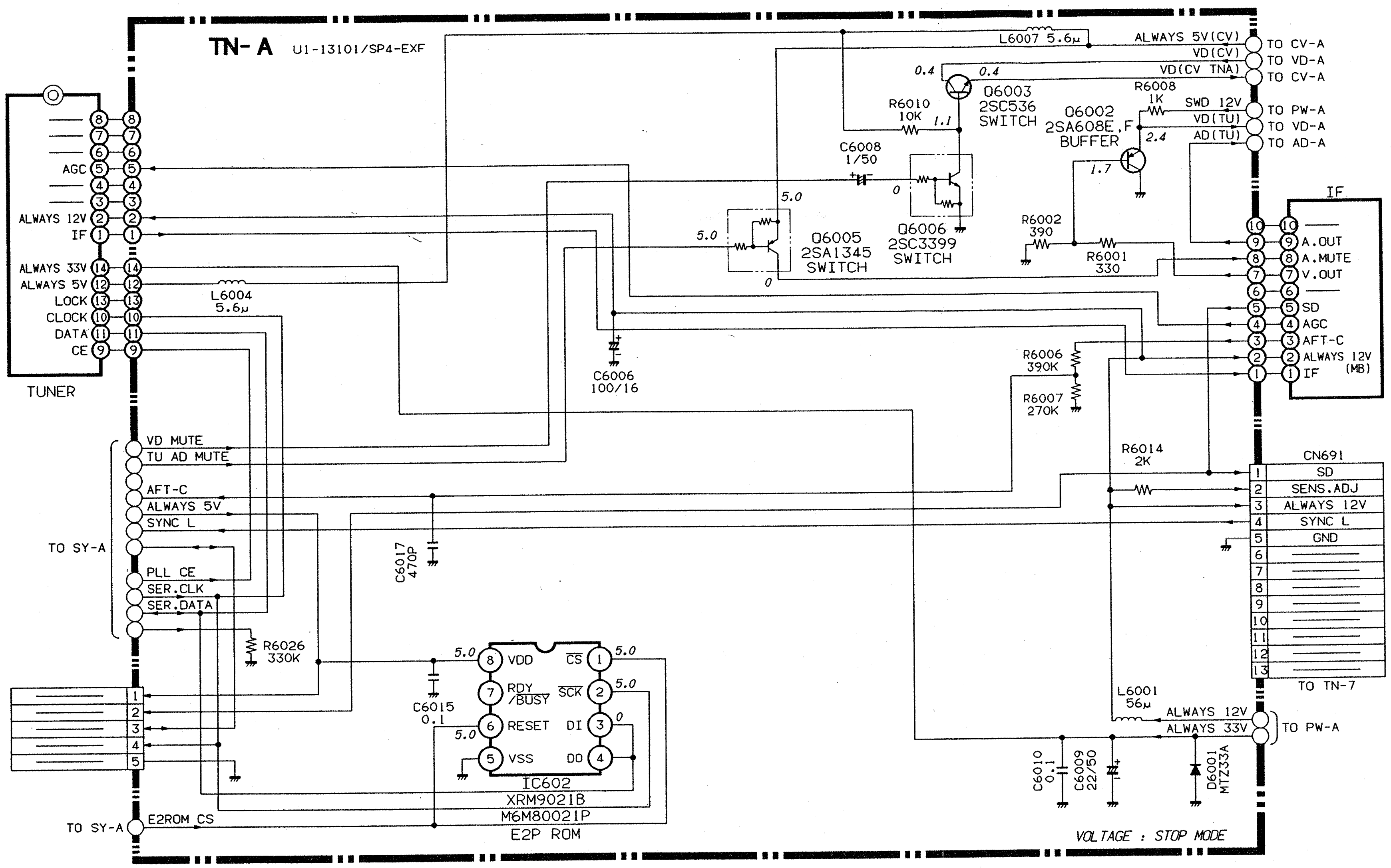
TB-4 BOARD TERMINAL CIRCUIT BOARD


TB-4
CN892
1 GND
2 AV2 AD IN
3 GND
4 AV2 VD IN
TO TB-3 CN881
CN891
1 GND
2 AV2 AD IN
3 GND
4 AV2 VD IN
TO TB-1 CN872

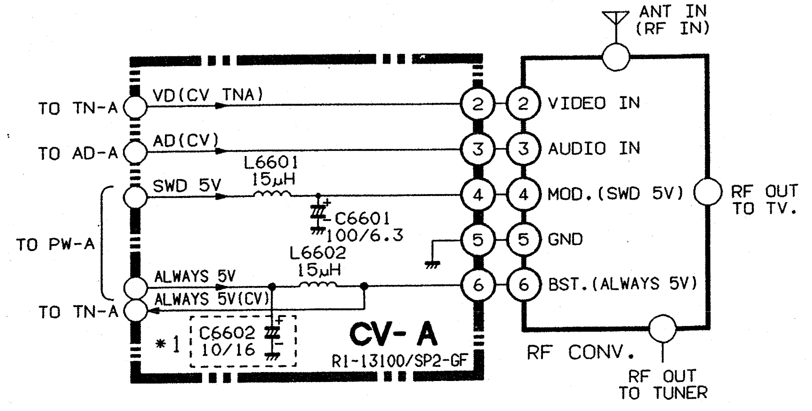
TB-4 P.C.B.


1AC4B11A29700D
TB-4
CN892
CN891
JCI-N1S

CP-1 BOARD (TN-A) TUNER IF CONNECTION CIRCUIT DIAGRAM
(FVH-P1400S & FVH-P1440S)


TN- A
U1-13101/SP4-EXF
TUNER
AGC
ALWAYS 12V
IF
ALWAYS 33V
ALWAYS 5V
LOCK
CLOCK
DATA
CE
L6004 5.6μ
L6007 5.6μ
ALWAYS 5V(CV)
VD(CV)
VD(CV TNA)
TO CV-A
TO VD-A
TO CV-A
Q6003 2SC536 SWITCH
R6010 10K
R6008 1K
SWD 12V
VD(TU)
AD(TU)
TO PW-A
TO VD-A
TO AD-A
Q6002 2SA608E,F BUFFER
C6008 1/50
Q6005 2SA1345 SWITCH
Q6006 2SC3399 SWITCH
R6002 390
R6001 330
IF
A.OUT
A.MUTE
V.OUT
SD
AGC
AFT-C
ALWAYS 12V (MB)
IF
C6006 100/16
R6006 390K
R6007 270K
R6014 2K
CN691
SD
SENS.ADJ
ALWAYS 12V
SYNC L
GND
TO TN-7
VD MUTE
TU AD MUTE
AFT-C
ALWAYS 5V
SYNC L
TO SY-A
PLL CE
SER.CLK
SER.DATA
R6026 330K
C6017 470P
C6015 0.1
VDD
RDY/BUSY
RESET
VSS
CS
SCK
DI
DO
IC602 XRM9021B M6M80021P E2P ROM
L6001 56μ
ALWAYS 12V
ALWAYS 33V
TO PW-A
C6010 0.1
C6009 22/50
D6001 MTZ33A
E2ROM CS
TO SY-A
VOLTAGE : STOP MODE

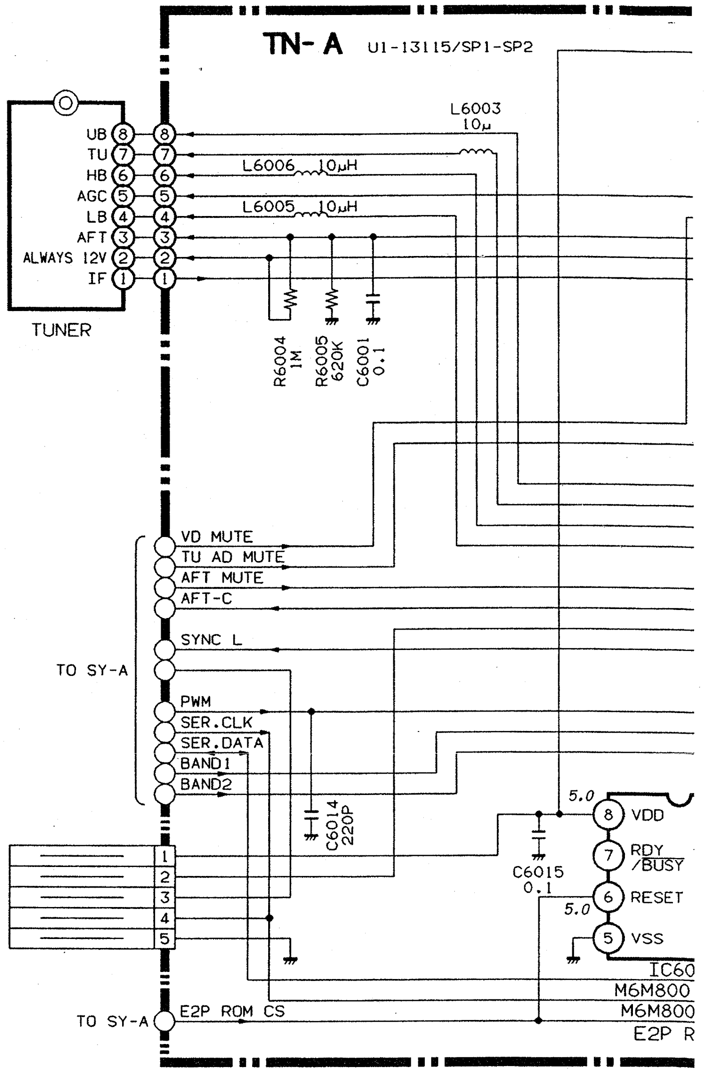
CP-1 BOARD (CV-A) RF CONVERTER CONNECTION CIRCUIT DIAGRAM


ANT IN (RF IN)
TO TN-A
VD(CV TNA)
TO AD-A
AD(CV)
TO PW-A
SWD 5V
L6601 15μH
C6601 100/6.3
L6602 15μH
ALWAYS 5V
ALWAYS 5V(CV)
TO TN-A
*1 C6602 10/16
CV- A
R1-13100/SP2-GF
VIDEO IN
AUDIO IN
MOD.(SWD 5V)
GND
BST.(ALWAYS 5V)
RF OUT TO TV.
RF CONV.
RF OUT TO TUNER

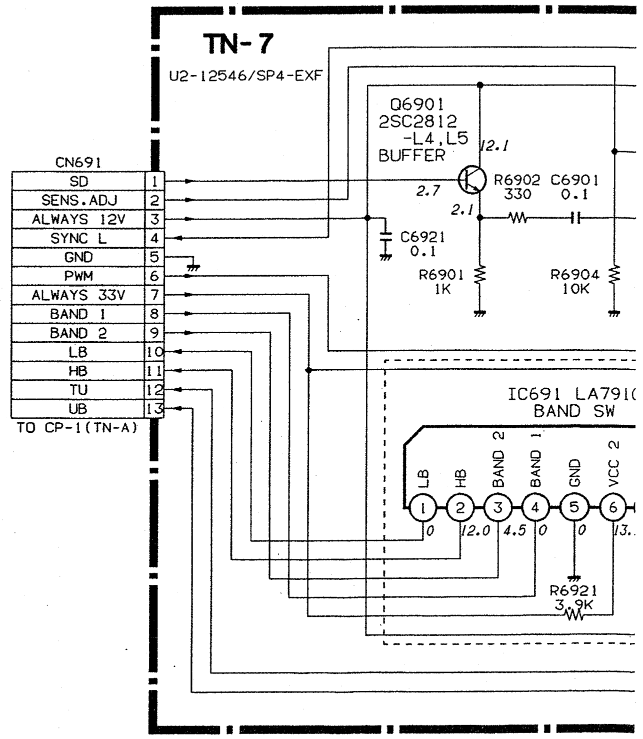
NOTE

	*1
FVH-P1400DK	NOT USE
FVH-P1400S FVH-P1440S	USE

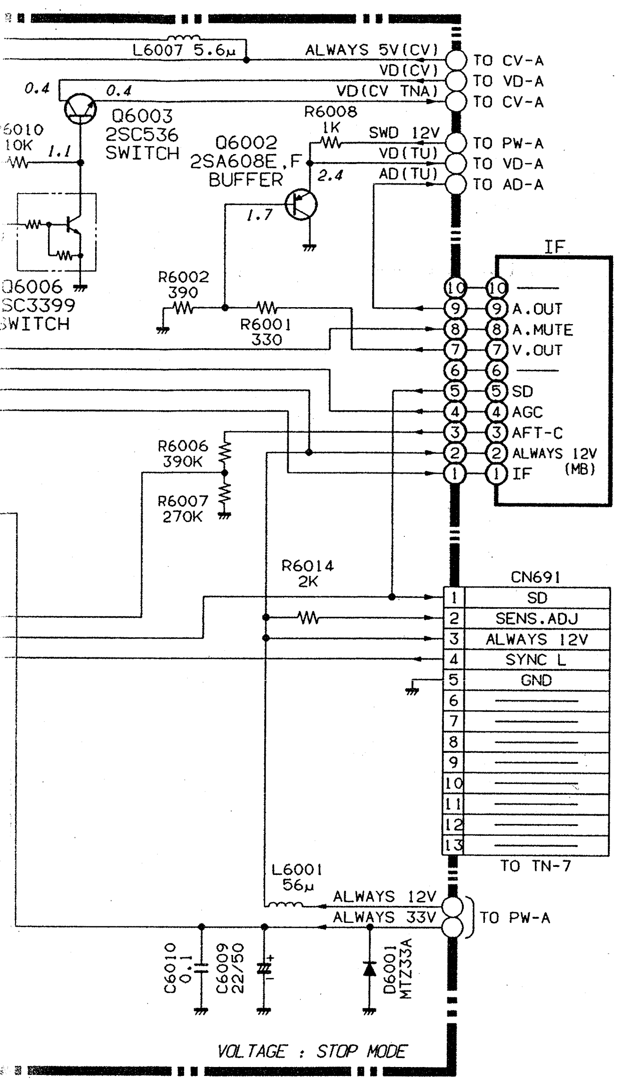
CP-1 BOARD (TN-A)


TN- A
U1-13115/SP1-SP2
UB
TU
HB
AGC
LB
AFT
ALWAYS 12V
IF
TUNER
L6003 10μ
L6006 10μH
L6005 10μH
R6004 1M
R6005 620K
C6001 0.1
VD MUTE
TU AD MUTE
AFT MUTE
AFT-C
SYNC L
TO SY-A
PWM
SER.CLK
SER.DATA
BAND1
BAND2
C6014 220P
C6015 0.1
VDD
RDY/BUSY
RESET
VSS
TO SY-A
E2P ROM CS

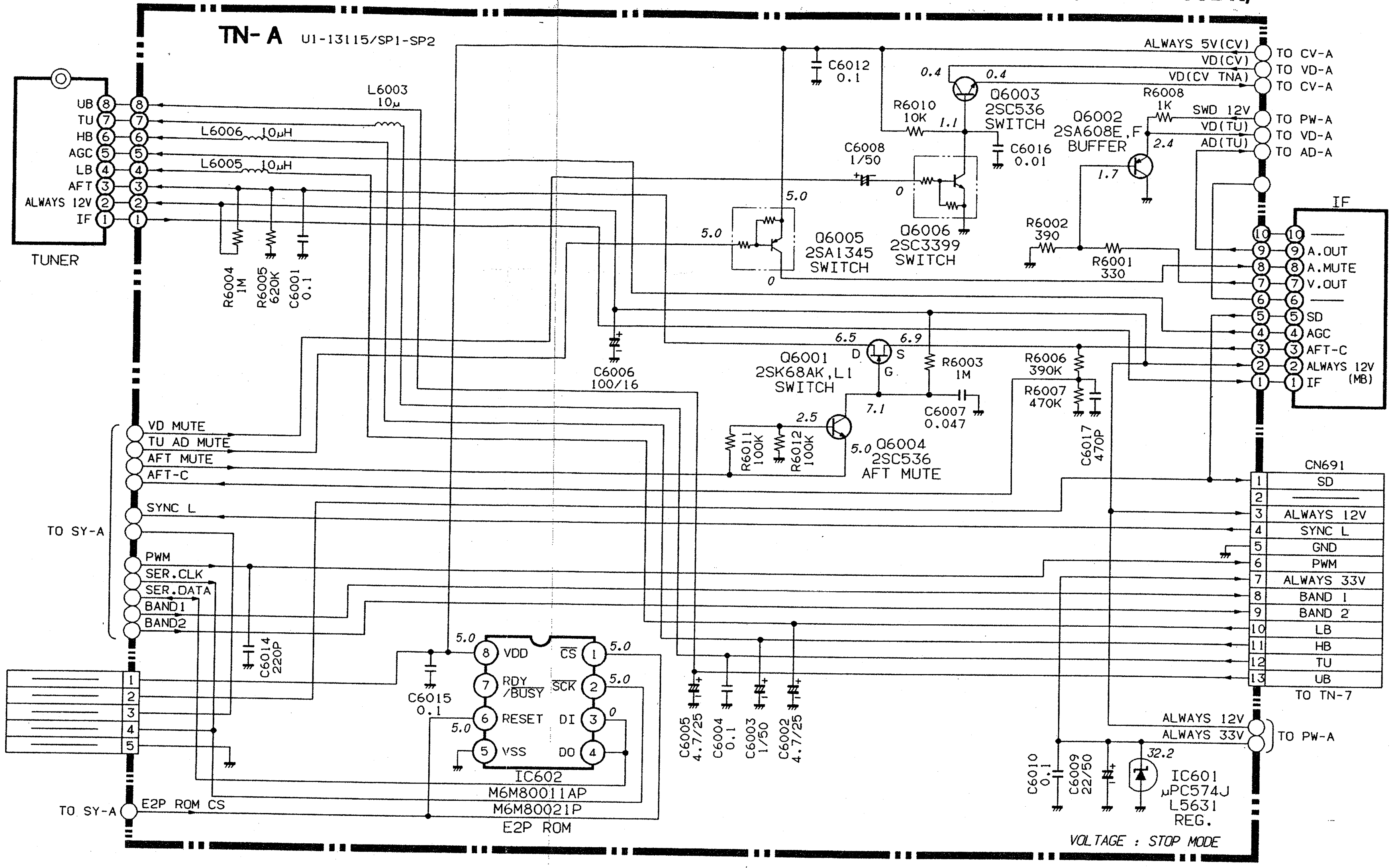
TN-7 BOARD SYNC


TN- 7
U2-12546/SP4-EXF
Q6901 2SC2812 -L4,L5 BUFFER
CN691
SD
SENS.ADJ
ALWAYS 12V
SYNC L
GND
PWM
ALWAYS 33V
BAND 1
BAND 2
LB
HB
TU
UB
TO CP-1(TN-A)
R6902 330
C6901 0.1
C6921 0.1
R6901 1K
R6904 10K
IC691 LA791
BAND SW
LB
HB
BAND 2
BAND 1
GND
VCC 2
R6921 3.9K

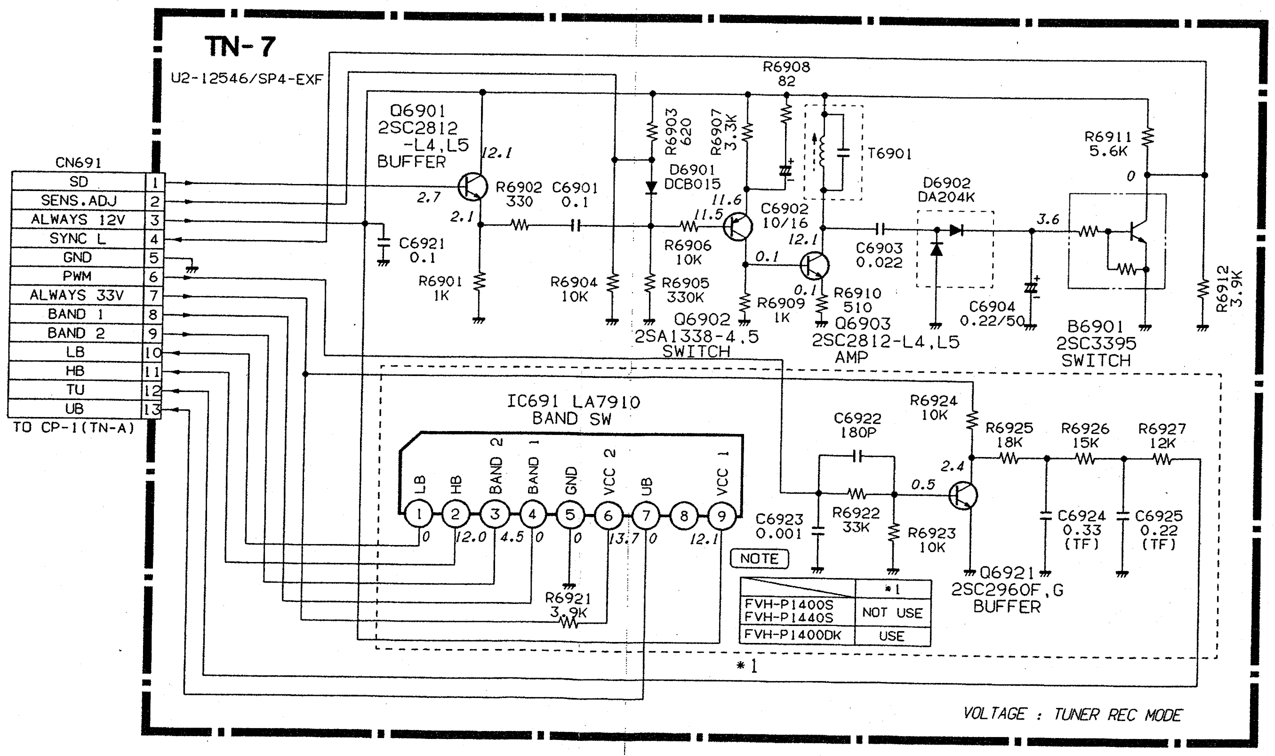
CIRCUIT DIAGRAM


L6007 5.6μ
ALWAYS 5V(CV)
VD(CV)
VD(CV TNA)
TO CV-A
TO VD-A
TO CV-A
Q6003
2SC536
SWITCH
R6008
1K
SWD 12V
VD(TU)
AD(TU)
TO PW-A
TO VD-A
TO AD-A
Q6002
2SA608E,F
BUFFER
Q6006
2SC3399
SWITCH
R6002
390
R6001
330
IF
A.OUT
A.MUTE
V.OUT
SD
AGC
AFT-C
ALWAYS 12V
IF (MB)
R6006
390K
R6007
270K
R6014
2K
CN691
SD
SENS.ADJ
ALWAYS 12V
SYNC L
GND
TO TN-7
L6001
56μ
ALWAYS 12V
ALWAYS 33V
TO PW-A
C6010
0.1
C6009
22/50
D6001
MTZ33A
VOLTAGE : STOP MODE

CP-1 BOARD (TN-A) TUNER IF CONNECTION CIRCUIT DIAGRAM (FVH-P1400DK)


TN-A
U1-13115/SP1-SP2
TUNER
UB
TU
HB
AGC
LB
AFT
ALWAYS 12V
IF
L6003
10μ
L6006 10μH
L6005 10μH
R6004
1M
R6005
620K
C6001
0.1
C6012
0.1
Q6003
2SC536
SWITCH
R6010
10K
C6008
1/50
C6016
0.01
Q6002
2SA608E,F
BUFFER
R6008
1K
SWD 12V
VD(TU)
AD(TU)
ALWAYS 5V(CV)
VD(CV)
VD(CV TNA)
TO CV-A
TO VD-A
TO CV-A
TO PW-A
TO VD-A
TO AD-A
Q6005
2SA1345
SWITCH
Q6006
2SC3399
SWITCH
R6002
390
R6001
330
IF
A.OUT
A.MUTE
V.OUT
SD
AGC
AFT-C
ALWAYS 12V
IF (MB)
C6006
100/16
Q6001
2SK68AK,L1
SWITCH
R6003
1M
C6007
0.047
R6006
390K
R6007
470K
R6011
100K
R6012
100K
Q6004
2SC536
AFT MUTE
C6017
470P
VD MUTE
TU AD MUTE
AFT MUTE
AFT-C
SYNC L
TO SY-A
PWM
SER.CLK
SER.DATA
BAND1
BAND2
C6014
220P
C6015
0.1
VDD
RDY/BUSY
RESET
VSS
CS
SCK
DI
DO
IC602
M6M80011AP
M6M80021P
E2P ROM
TO SY-A
E2P ROM CS
C6005
4.7/25
C6004
0.1
C6003
1/50
C6002
4.7/25
CN691
SD
ALWAYS 12V
SYNC L
GND
PWM
ALWAYS 33V
BAND 1
BAND 2
LB
HB
TU
UB
TO TN-7
ALWAYS 12V
ALWAYS 33V
TO PW-A
C6010
0.1
C6009
22/50
IC601
μPC574J
L5631
REG.
VOLTAGE : STOP MODE

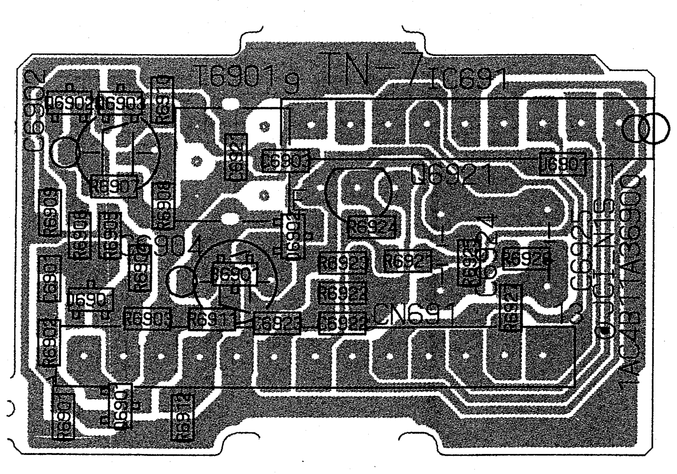
TN-7 BOARD SYNC DET. CIRCUIT DIAGRAM


TN-7
U2-12546/SP4-EXF
CN691
SD
SENS.ADJ
ALWAYS 12V
SYNC L
GND
PWM
ALWAYS 33V
BAND 1
BAND 2
LB
HB
TU
UB
TO CP-1(TN-A)
Q6901
2SC2812
-L4,L5
BUFFER
R6902
330
C6901
0.1
C6921
0.1
R6901
1K
R6904
10K
R6903
620
R6907
3.3K
R6908
82
D6901
DCB015
T6901
C6902
10/16
R6906
10K
R6905
330K
Q6902
2SA1338-4.5
SWITCH
R6909
1K
C6903
0.022
R6910
510
Q6903
2SC2812-L4,L5
AMP
D6902
DA204K
C6904
0.22/50
R6911
5.6K
B6901
2SC3395
SWITCH
R6912
3.9K
IC691 LA7910
BAND SW
LB
HB
BAND 2
BAND 1
GND
VCC 2
UB
VCC 1
R6921
3.9K
C6922
180P
R6924
10K
R6925
18K
R6926
15K
R6927
12K
C6923
0.001
R6922
33K
R6923
10K
C6924
0.33
(TF)
C6925
0.22
(TF)
Q6921
2SC2960F,G
BUFFER
VOLTAGE : TUNER REC MODE

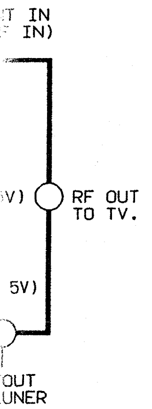
NOTE

	*1
FVH-P1400S FVH-P1440S	NOT USE
FVH-P1400DK	USE

TN-7 P.C.B.

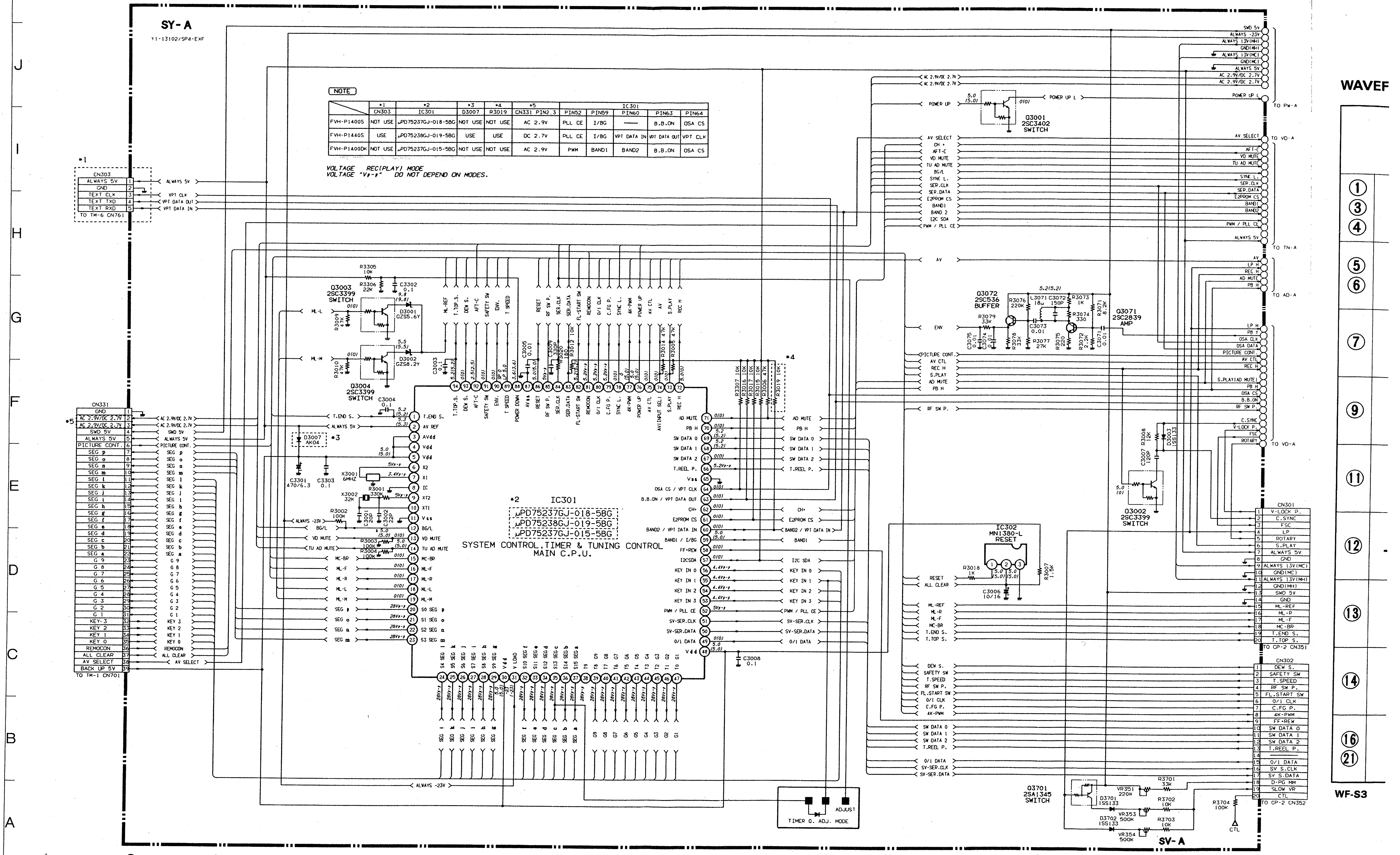

T6901
TN-7
IC691
R6903
R6901
R6905
R6908
R6909
R6910
R6911
R6912
R6906
R6904
R6902
R6907
R6923
R6924
R6925
R6926
R6927
R6921
R6922
Q6921
CN691

DIAGRAM


T IN
IN)
RF OUT
TO TV.
5V)
OUT
UNER

8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23

CP-1 BOARD (SY-A, SV-A) SYSTEM CONTROL CIRCUIT DIAGRAM

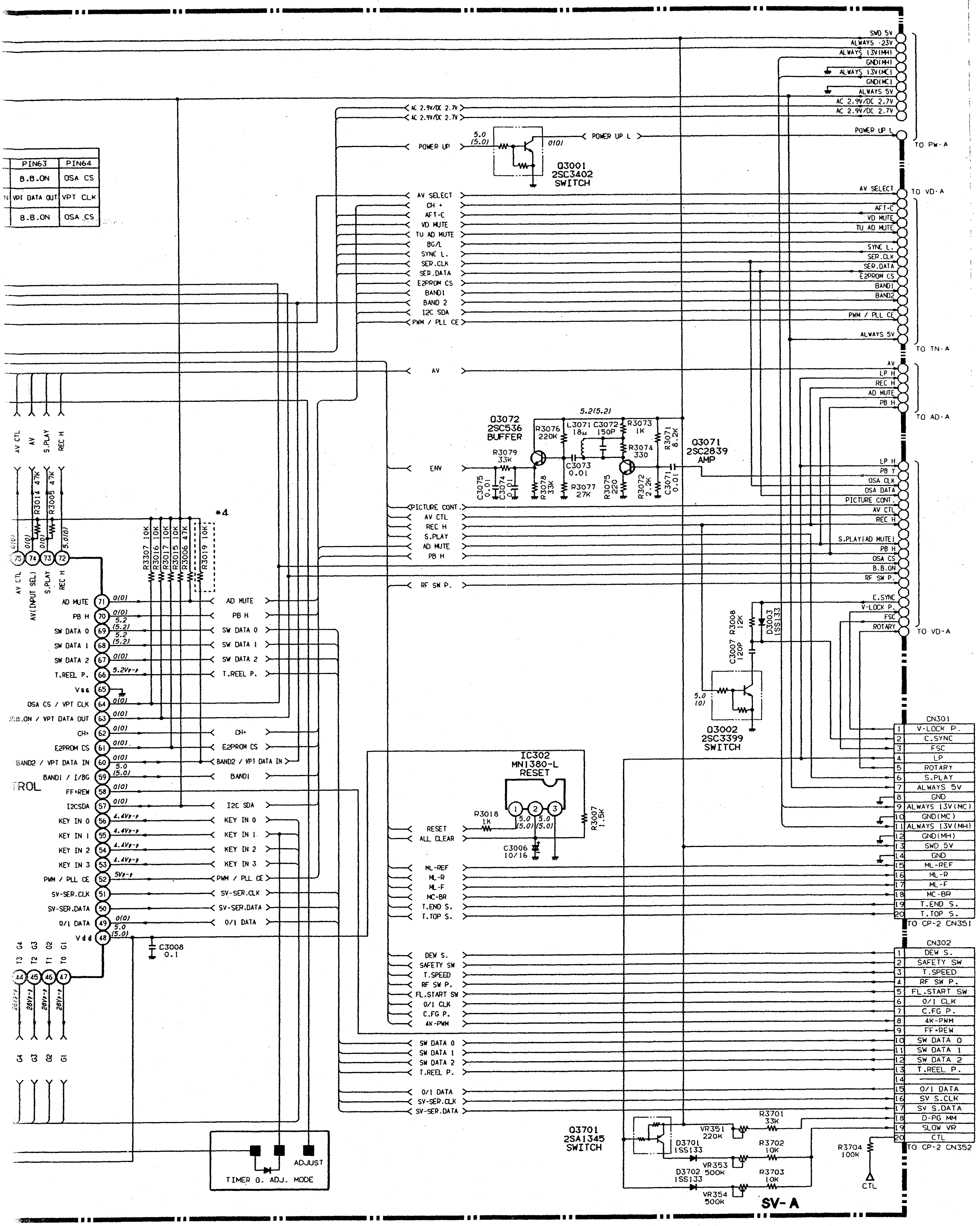

SY-A
Y1-13102/SP4-EXF
SV-A
CN303
ALWAYS 5V
GND
TEXT CLK
TEXT TXD
TEXT RXD
TO TM-6 CN761
CN331
TO TM-1 CN701
Q3003 2SC3399 SWITCH
Q3004 2SC3399 SWITCH
D3001 GZS5.6Y
D3002 GZS8.2Y
D3007 AK04
X3001 6MHZ
X3002 32K
IC301
μPD75237GJ-018-5BG
μPD75238GJ-019-5BG
μPD75237GJ-015-5BG
SYSTEM CONTROL,TIMER & TUNING CONTROL
MAIN C.P.U.
IC302 MN1380-L RESET
Q3001 2SC3402 SWITCH
Q3072 2SC536 BUFFER
Q3071 2SC2839 AMP
Q3002 2SC3399 SWITCH
Q3701 2SA1345 SWITCH
TIMER 0. ADJ. MODE
ADJUST
CN301
TO CP-2 CN351
CN302
TO CP-2 CN352
TO PW-A
TO VD-A
TO TN-A
TO AD-A
ALWAYS -23V
WAVEF
WF-S3
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

NOTE

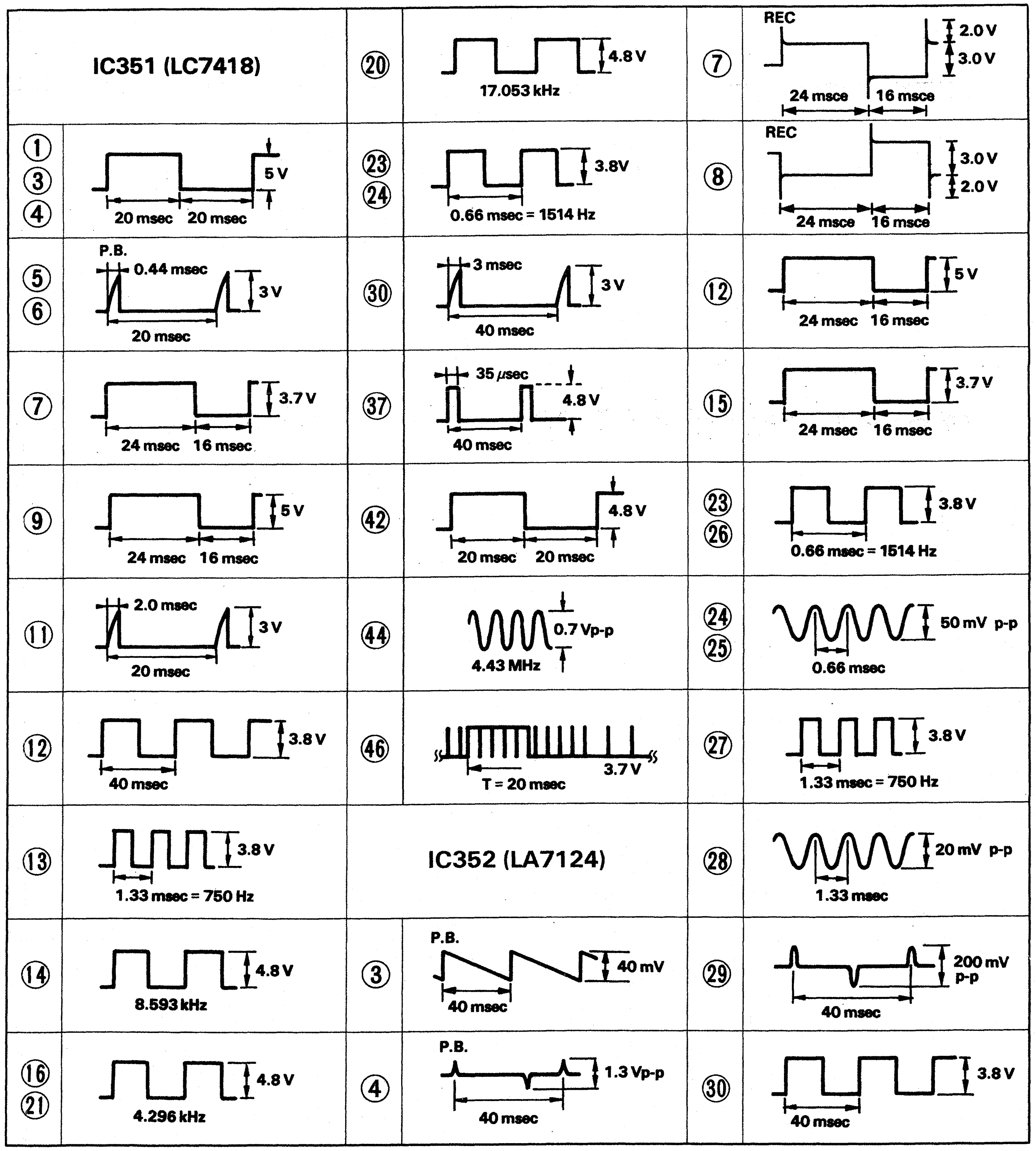
	*1	*2	*3	*4	*5	IC301				
	CN303	IC301	D3007	R3019	CN331 PIN2.3	PIN52	PIN59	PIN60	PIN63	PIN64
FVH-P1400S	NOT USE	μPD75237GJ-018-5BG	NOT USE	NOT USE	AC 2.9V	PLL CE	I/BG	——	B.B.ON	OSA CS
FVH-P1440S	USE	μPD75238GJ-019-5BG	USE	USE	DC 2.7V	PLL CE	I/BG	VPT DATA IN	VPT DATA OUT	VPT CLK
FVH-P1400DK	NOT USE	μPD75237GJ-015-5BG	NOT USE	NOT USE	AC 2.9V	PWM	BAND1	BAND2	B.B.ON	OSA CS

VOLTAGE REC(PLAY) MODE
VOLTAGE "Vp-p" DO NOT DEPEND ON MODES.

SYSTEM CONTROL CIRCUIT DIAGRAM

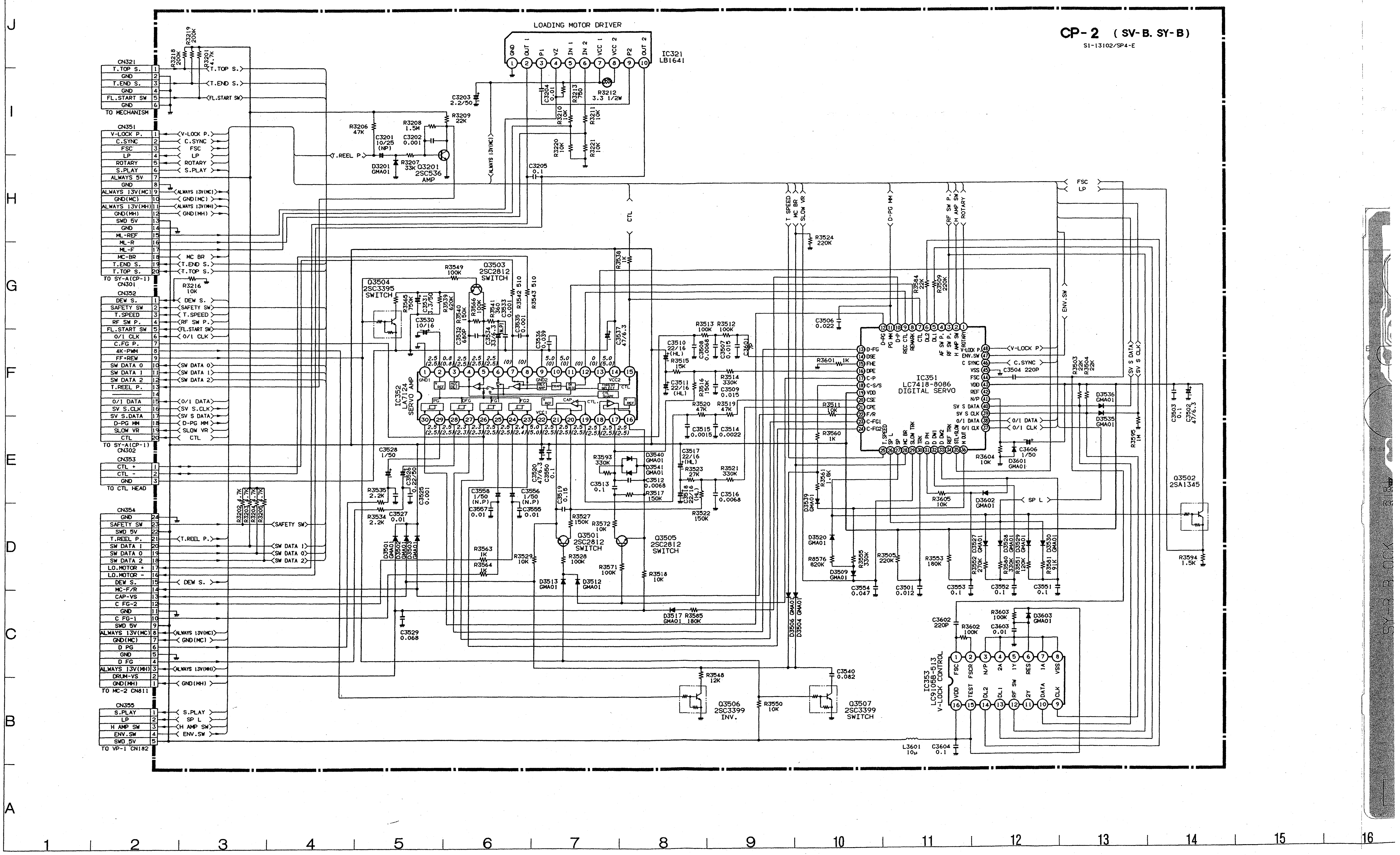

PIN63
PIN64
B.B.ON
OSA CS
VPT DATA OUT
VPT CLK
B.B.ON
OSA CS
SWD 5V
ALWAYS -23V
ALWAYS 13V(MH)
GND(MH)
ALWAYS 13V(MC)
GND(MC)
ALWAYS 5V
AC 2.9V/DC 2.7V
AC 2.9V/DC 2.7V
POWER UP L
TO PW-A
POWER UP
Q3001
2SC3402
SWITCH
AV SELECT
TO VD-A
CH +
AFT-C
VD MUTE
TU AD MUTE
BG/L
SYNC L.
SER.CLK
SER.DATA
E2PROM CS
BAND1
BAND 2
I2C SDA
PWM / PLL CE
ALWAYS 5V
TO TN-A
AV
LP H
REC H
AD MUTE
PB H
TO AD-A
Q3072
2SC536
BUFFER
Q3071
2SC2839
AMP
ENV
R3079 33K
R3076 220K
L3071 18μ
C3072 150P
R3073 1K
R3074 330
R3071 8.2K
C3073 0.01
R3077 27K
R3075 220
R3072 2.2K
C3071 0.01
C3075 0.01
C3074 0.01
R3078 33K
PB Y
OSA CLK
OSA DATA
PICTURE CONT.
AV CTL
REC H
S.PLAY
S.PLAY(AD MUTE)
B.B.ON
RF SW P.
C.SYNC
V-LOCK P.
FSC
ROTARY
TO VD-A
R3008 12K
D3003 1SS133
C3007 120P
Q3002
2SC3399
SWITCH
*4
R3307 10K
R3016 10K
R3017 10K
R3015 10K
R3006 47K
R3019 10K
R3014 47K
R3005 47K
AV CTL
AV
S.PLAY
REC H
AV(INPUT SEL)
AD MUTE
PB H
SW DATA 0
SW DATA 1
SW DATA 2
T.REEL P.
Vss
OSA CS / VPT CLK
B.B.ON / VPT DATA OUT
CH+
E2PROM CS
BAND2 / VPT DATA IN
BAND1 / I/BG
FF+REW
I2CSDA
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
PWM / PLL CE
SV-SER.CLK
SV-SER.DATA
0/1 DATA
Vdd
C3008 0.1
TROL
IC302
MN1380-L
RESET
R3018 1K
R3007 1.5K
C3006 10/16
RESET
ALL CLEAR
ML-REF
ML-R
ML-F
MC-BR
T.END S.
T.TOP S.
CN301
V-LOCK P.
C.SYNC
FSC
LP
ROTARY
S.PLAY
ALWAYS 5V
GND
ALWAYS 13V(MC)
GND(MC)
ALWAYS 13V(MH)
GND(MH)
SWD 5V
GND
ML-REF
ML-R
ML-F
MC-BR
T.END S.
T.TOP S.
TO CP-2 CN351
CN302
DEW S.
SAFETY SW
T.SPEED
RF SW P.
FL.START SW
0/1 CLK
C.FG P.
4K-PWM
FF+REW
SW DATA 0
SW DATA 1
SW DATA 2
T.REEL P.
0/1 DATA
SV S.CLK
SV S.DATA
D-PG MM
SLOW VR
CTL
TO CP-2 CN352
Q3701
2SA1345
SWITCH
D3701 1SS133
D3702 1SS133
VR351 220K
VR353 500K
VR354 500K
R3701 33K
R3702 10K
R3703 10K
R3704 100K
CTL
TIMER 0. ADJ. MODE
ADJUST
SV-A
G4
G3
G2
G1

WAVEFORM OF SERVO

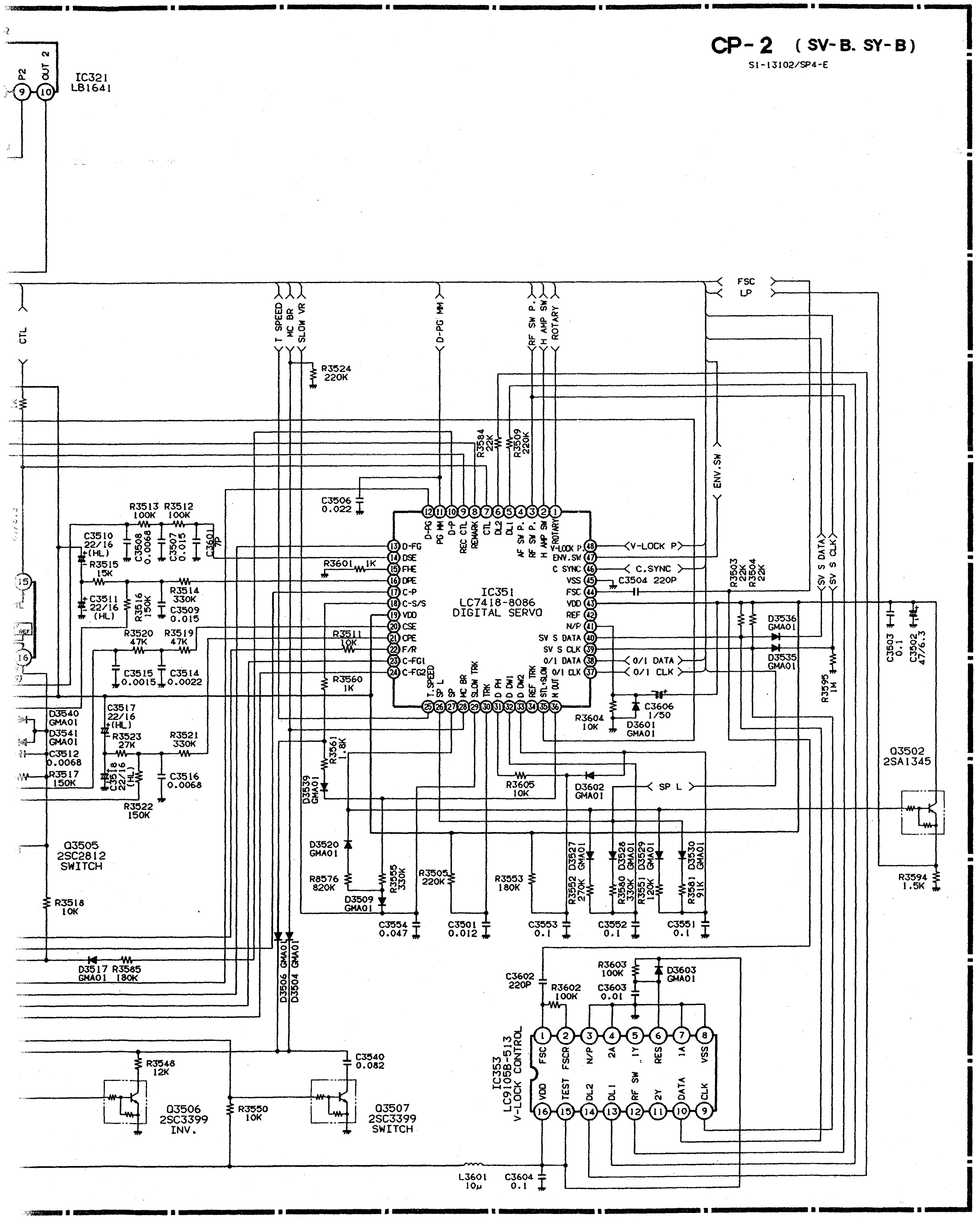

IC351 (LC7418)
⑳ 4.8 V 17.053 kHz
⑦ REC 2.0 V 3.0 V 24 msce 16 msce
① ③ ④ 5 V 20 msec 20 msec
㉓ ㉔ 3.8V 0.66 msec = 1514 Hz
⑧ REC 3.0 V 2.0 V 24 msce 16 msce
⑤ ⑥ P.B. 0.44 msec 3 V 20 msec
㉚ 3 msec 3 V 40 msec
⑫ 5 V 24 msec 16 msec
⑦ 3.7 V 24 msec 16 msec
㊲ 35 μsec 4.8 V 40 msec
⑮ 3.7 V 24 msec 16 msec
⑨ 5 V 24 msec 16 msec
㊷ 4.8 V 20 msec 20 msec
㉓ ㉖ 3.8 V 0.66 msec = 1514 Hz
⑪ 2.0 msec 3 V 20 msec
㊹ 0.7 Vp-p 4.43 MHz
㉔ ㉕ 50 mV p-p 0.66 msec
⑫ 3.8 V 40 msec
㊻ 3.7 V T = 20 msec
㉗ 3.8 V 1.33 msec = 750 Hz
⑬ 3.8 V 1.33 msec = 750 Hz
IC352 (LA7124)
㉘ 20 mV p-p 1.33 msec
⑭ 4.8 V 8.593 kHz
③ P.B. 40 mV 40 msec
㉙ 200 mV p-p 40 msec
⑯ ㉑ 4.8 V 4.296 kHz
④ P.B. 1.3 Vp-p 40 msec
㉚ 3.8 V 40 msec

WF-S3

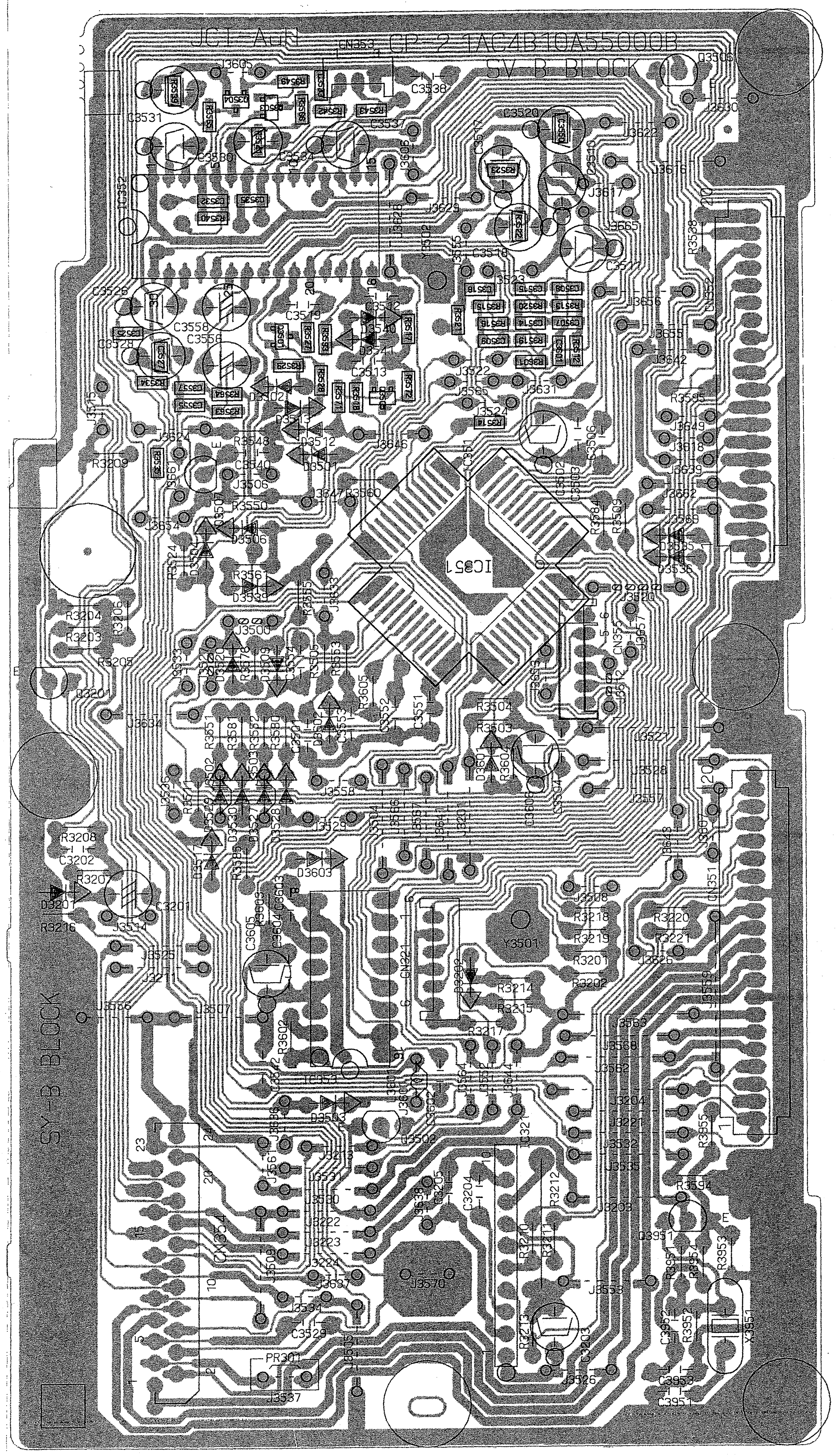
CP-2 BOARD (SY-B, SV-B) SERVO CIRCUIT DIAGRAM


CP-2 (SV-B. SY-B)
S1-13102/SP4-E
LOADING MOTOR DRIVER
IC321 LB1641
CN321
T.TOP S.
GND
T.END S.
FL.START SW
TO MECHANISM
CN351
V-LOCK P.
C.SYNC
FSC
LP
ROTARY
S.PLAY
ALWAYS 5V
ALWAYS 13V(MC)
GND(MC)
ALWAYS 13V(MH)
GND(MH)
SWD 5V
ML-REF
ML-R
ML-F
MC-BR
TO SY-A(CP-1) CN301
CN352
DEW S.
SAFETY SW
T.SPEED
RF SW P.
0/1 CLK
C.FG P.
4K-PWM
FF+REW
SW DATA 0
SW DATA 1
SW DATA 2
T.REEL P.
0/1 DATA
SV S.CLK
SV S.DATA
D-PG MM
SLOW VR
CTL
TO SY-A(CP-1) CN302
CN353
CTL +
CTL -
TO CTL HEAD
CN354
LO.MOTOR +
LO.MOTOR -
MC-F/R
CAP-VS
C FG-2
C FG-1
D PG
D FG
DRUM-VS
TO MC-2 CN811
CN355
SP L
H AMP SW
ENV.SW
TO VP-1 CN182
Q3201 2SC536 AMP
D3201 GMA01
IC352 LA7124 SERVO AMP
Q3504 2SC3395 SWITCH
Q3503 2SC2812 SWITCH
Q3501 2SC2812 SWITCH
Q3505 2SC2812 SWITCH
IC351 LC7418-8086 DIGITAL SERVO
IC353 LC9105B-513 V-LOCK CONTROL
Q3506 2SC3399 INV.
Q3507 2SC3399 SWITCH
Q3502 2SA1345
L3601 10μ
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

V-B) SERVO CIRCUIT DIAGRAM


CP-2 (SV-B. SY-B)
S1-13102/SP4-E
IC321
LB1641
P2
OUT 2
CTL
T SPEED
MIC BR
SLOW VR
D-PG MM
RF SW P.
H AMP SW
ROTARY
FSC
LP
ENV.SW
R3524
220K
R3584
22K
R3509
220K
C3506
0.022
R3513 100K
R3512 100K
C3510 22/16 (HL)
R3515 15K
C3508 0.0068
C3507 0.015
C3601 1P
C3511 22/16 (HL)
R3516 150K
R3514 330K
C3509 0.015
R3520 47K
R3519 47K
C3515 0.0015
C3514 0.0022
R3601 1K
R3511 10K
R3560 1K
IC351
LC7418-8086
DIGITAL SERVO
D-FG
DSE
FHE
DPE
C-P
C-S/S
VDD
CSE
CPE
F/R
C-FG1
C-FG2
V-LOCK P
ENV.SW
C SYNC
VSS
FSC
VDD
REF
N/P
SV S DATA
SV S CLK
0/1 DATA
0/1 CLK
V-LOCK P
C.SYNC
C3504 220P
0/1 DATA
0/1 CLK
R3503 22K
R3504 22K
SV S DATA
SV S CLK
D3536 GMA01
D3535 GMA01
C3503 0.1
C3502 47/6.3
R3595 1M
C3606 1/50
R3604 10K
D3601 GMA01
D3540 GMA01
D3541 GMA01
C3512 0.0068
R3517 150K
C3517 22/16 (HL)
R3523 27K
C3518 22/16 (HL)
R3521 330K
C3516 0.0068
R3522 150K
R3561 6.8K
D3539 GMA01
R3605 10K
D3602 GMA01
SP L
Q3502
2SA1345
D3520 GMA01
R8576 820K
D3509 GMA01
R3555 330K
R3505 220K
R3553 180K
D3527 GMA01
D3528 GMA01
D3529 GMA01
D3530 GMA01
R3552 270K
R3540 330K
R3551 120K
R3581 91K
C3554 0.047
C3501 0.012
C3553 0.1
C3552 0.1
C3551 0.1
R3594 1.5K
Q3505
2SC2812
SWITCH
R3518 10K
D3517 GMA01
R3585 180K
D3506 GMA01
D3504 GMA01
C3602 220P
R3602 100K
R3603 100K
C3603 0.01
D3603 GMA01
IC353
LC910068-513
V-LOCK CONTROL
FSC
FSCR
N/P
2A
1Y
RES
1A
VSS
VDD
TEST
DL2
DL1
RF SW
2Y
DATA
CLK
R3548 12K
Q3506
2SC3399
INV.
R3550 10K
C3540 0.082
Q3507
2SC3399
SWITCH
L3601 10μ
C3604 0.1

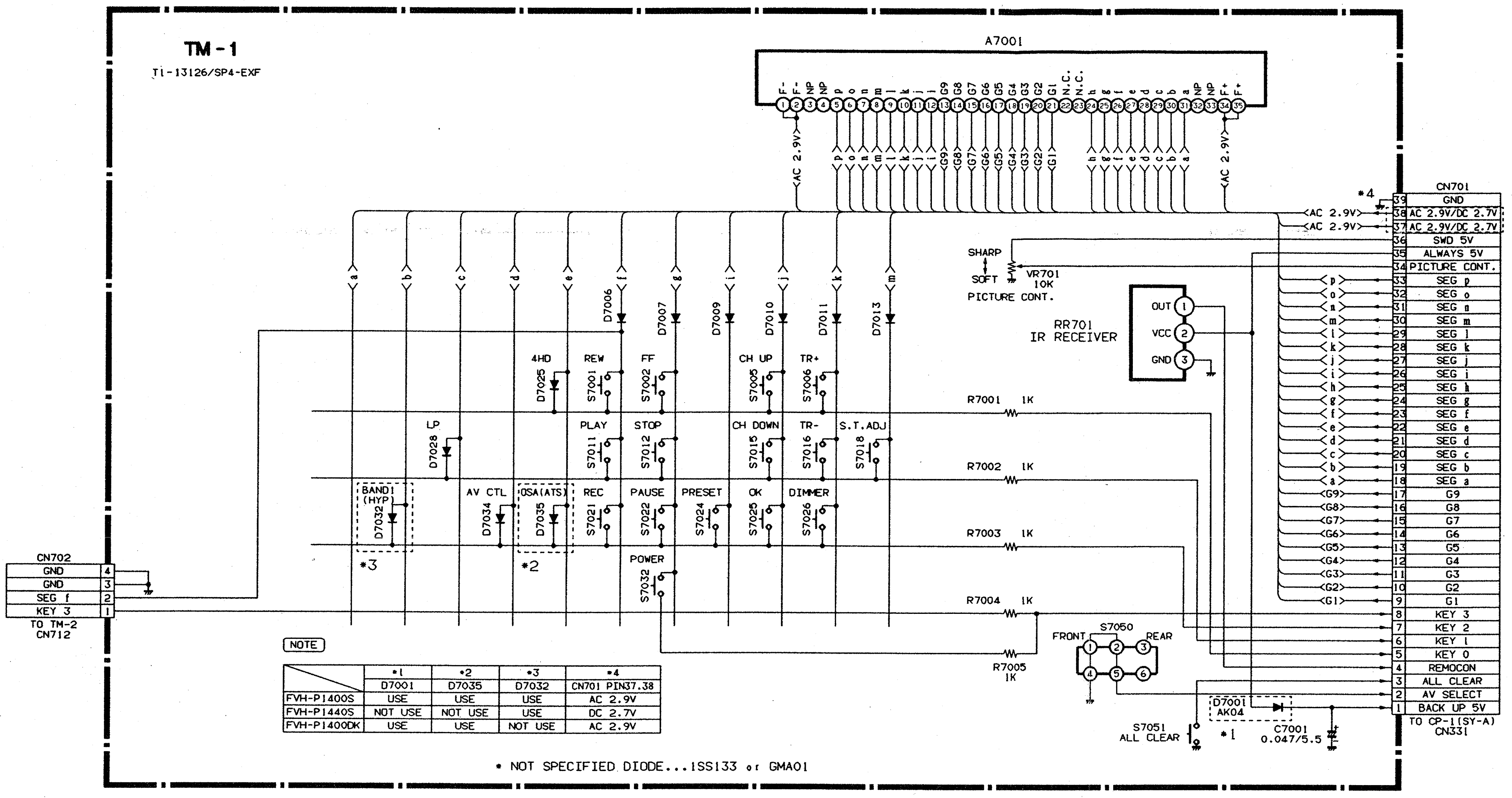
CP-2 P.C.B.


CP-2 1AC4B10A5500B
SV-B BLOCK
SY-B BLOCK
IC351
CN351
CN352
CN321
Y3501
PR301
X3951
Q3505
Q3502
Q3951

8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23

K
J
I
H
G
F
E
D
C
B
A

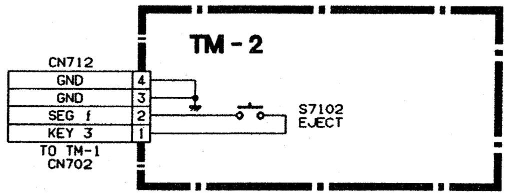
TM-1,2 BOARD OPERATION KEY & DISPLAY (FLD) CIRCUIT DIAGRAM


TM - 1
Ti-13126/SP4-EXF
A7001
F- F- NP NP p o n m l k j i G9 G8 G7 G6 G5 G4 G3 G2 G1 N.C. N.C. h g f e d c b a NP NP F+ F+
<AC 2.9V>
SHARP
SOFT
VR701
10K
PICTURE CONT.
RR701
IR RECEIVER
OUT
VCC
GND
D7006
D7007
D7009
D7010
D7011
D7013
4HD
D7025
REW
S7001
FF
S7002
CH UP
S7005
TR+
S7006
LP
D7028
PLAY
S7011
STOP
S7012
CH DOWN
S7015
TR-
S7016
S.T.ADJ
S7018
BAND1 (HYP)
D7032
AV CTL
D7034
OSA(ATS)
D7035
REC
S7021
PAUSE
S7022
PRESET
S7024
OK
S7025
DIMMER
S7026
POWER
S7032
*3
*2
*4
R7001 1K
R7002 1K
R7003 1K
R7004 1K
R7005 1K
S7050
FRONT
REAR
S7051
ALL CLEAR
*1
D7001
AK04
C7001
0.047/5.5
CN702
4 GND
3 GND
2 SEG f
1 KEY 3
TO TM-2
CN712
CN701
39 GND
38 AC 2.9V/DC 2.7V
37 AC 2.9V/DC 2.7V
36 SWD 5V
35 ALWAYS 5V
34 PICTURE CONT.
33 SEG p
32 SEG o
31 SEG n
30 SEG m
29 SEG l
28 SEG k
27 SEG j
26 SEG i
25 SEG h
24 SEG g
23 SEG f
22 SEG e
21 SEG d
20 SEG c
19 SEG b
18 SEG a
17 G9
16 G8
15 G7
14 G6
13 G5
12 G4
11 G3
10 G2
9 G1
8 KEY 3
7 KEY 2
6 KEY 1
5 KEY 0
4 REMOCON
3 ALL CLEAR
2 AV SELECT
1 BACK UP 5V
TO CP-1(SY-A)
CN331

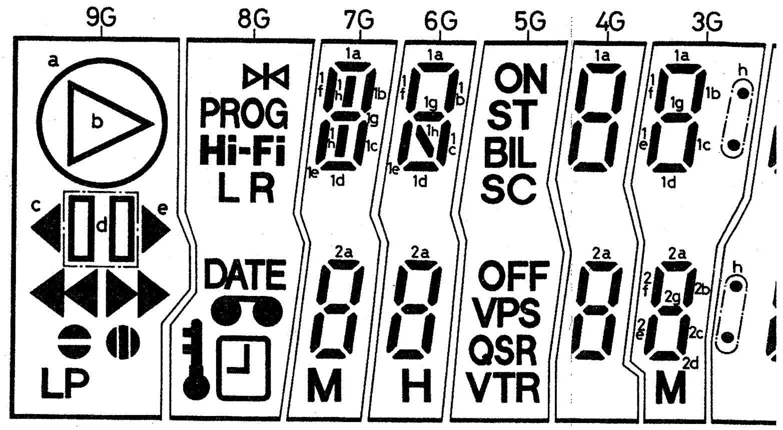
NOTE

	*1	*2	*3	*4
	D7001	D7035	D7032	CN701 PIN37.38
FVH-P1400S	USE	USE	USE	AC 2.9V
FVH-P1440S	NOT USE	NOT USE	USE	DC 2.7V
FVH-P1400DK	USE	USE	NOT USE	AC 2.9V

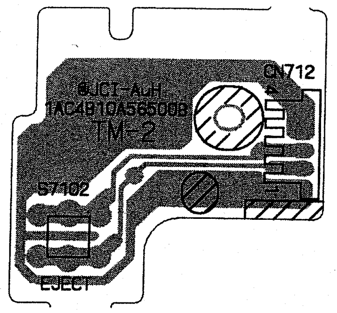
* NOT SPECIFIED DIODE...1SS133 or GMA01

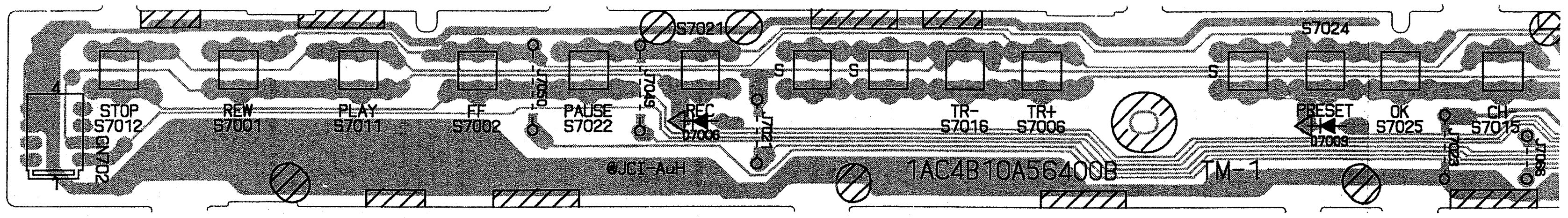

TM - 2
CN712
4 GND
3 GND
2 SEG f
1 KEY 3
TO TM-1
CN702
S7102
EJECT

A7001 DISPLAY GRID ASSIGNMENT


9G
8G
7G
6G
5G
4G
3G
a
b
c
d
e
PROG
Hi-Fi
L R
DATE
LP
M
H
ON
ST
BIL
SC
OFF
VPS
QSR
VTR
M
1a
1b
1c
1d
1e
1f
1g
1h
2a
2b
2c
2d
2e
2f
2g
h

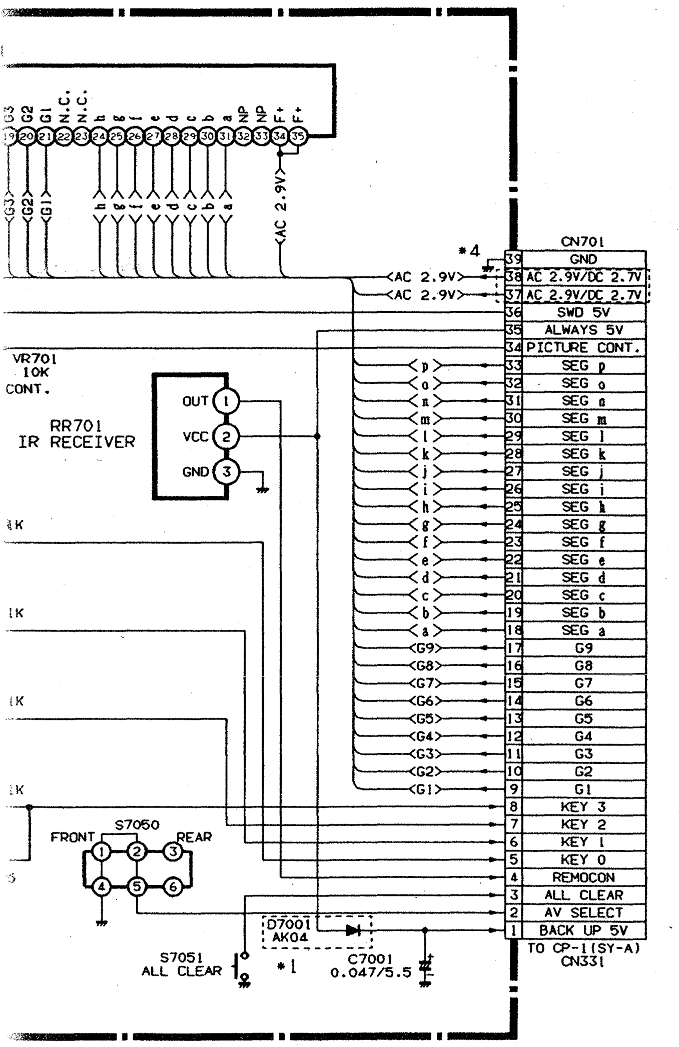
TM-2 P.C.B.


CN712
JCI-AuH
1AC4B10A56500B
TM-2
S7102
EJECT

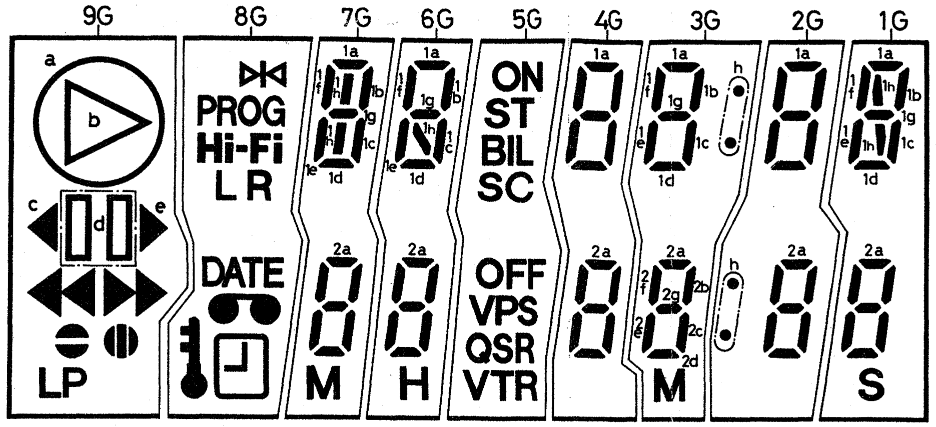

STOP
S7012
REW
S7001
PLAY
S7011
FF
S7002
PAUSE
S7022
S7021
REC
D7006
TR-
S7016
TR+
S7006
S7024
PRESET
D7009
OK
S7025
CH-
S7015
JCI-AuH
1AC4B10A56400B
TM-1
CN702

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

DIAGRAM


CN701
39 GND
38 AC 2.9V/DC 2.7V
37 AC 2.9V/DC 2.7V
36 SWD 5V
35 ALWAYS 5V
34 PICTURE CONT.
33 SEG p
32 SEG o
31 SEG n
30 SEG m
29 SEG l
28 SEG k
27 SEG j
26 SEG i
25 SEG h
24 SEG g
23 SEG f
22 SEG e
21 SEG d
20 SEG c
19 SEG b
18 SEG a
17 G9
16 G8
15 G7
14 G6
13 G5
12 G4
11 G3
10 G2
9 G1
8 KEY 3
7 KEY 2
6 KEY 1
5 KEY 0
4 REMOCON
3 ALL CLEAR
2 AV SELECT
1 BACK UP 5V
TO CP-1(SY-A) CN331
*4
<AC 2.9V>
VR701 10K CONT.
RR701 IR RECEIVER
OUT
VCC
GND
S7050
FRONT
REAR
D7001 AK04
S7051 ALL CLEAR
*1
C7001 0.047/5.5

A7001 DISPLAY GRID ASSIGNMENT

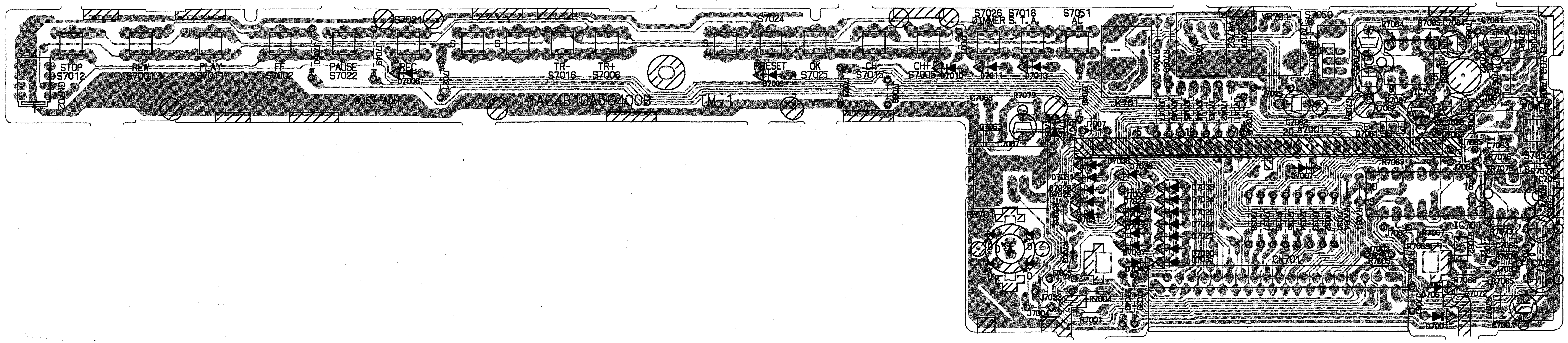

9G
8G
7G
6G
5G
4G
3G
2G
1G
PROG
Hi-Fi
L R
ON
ST
BIL
SC
DATE
OFF
VPS
QSR
VTR
LP
M
H
M
S

A7001 DISPLAY TABLE OF ANODE CONNECTION

	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	○	¤	1a	1a	**ON**	1a	1a	1a	1a
b	▷	▶◀	1b	1b	**ST**	1b	1b	1b	1b
c	◀	**PROG**	1c	1c	**BIL**	1c	1c	1c	1c
d	▯▯	**Hi-Fi**	1d	1d	**SC**	1d	1d	1d	1d
e	▶	**L**	1e	1e	–	1e	1e	1e	1e
f	–	**R**	1f	1f	–	1f	1f	1f	1f
g	–	–	1g	1g	–	1g	1g	1g	1g
h	–	–	1h	1h	–	–	:(UPPER)	:(LOWER)	1h
i	◀◀	**DATE**	2a	2a	**OFF**	2a	2a	2a	2a
j	▶▶	●●	2b	2b	**VPS**	2b	2b	2b	2b
k	⊖	🌡	2c	2c	**QSR**	2c	2c	2c	2c
l	◍	◰	2d	2d	**VTR**	2d	2d	2d	2d
m	**LP**	–	2e	2e	–	2e	2e	2e	2e
n	**EP**	–	2f	2f	–	2f	2f	2f	2f
o	–	–	2g	2g	–	2g	2g	2g	2g
p	–	–	**M**	**H**	–	**H**	**M**	**M**	**S**

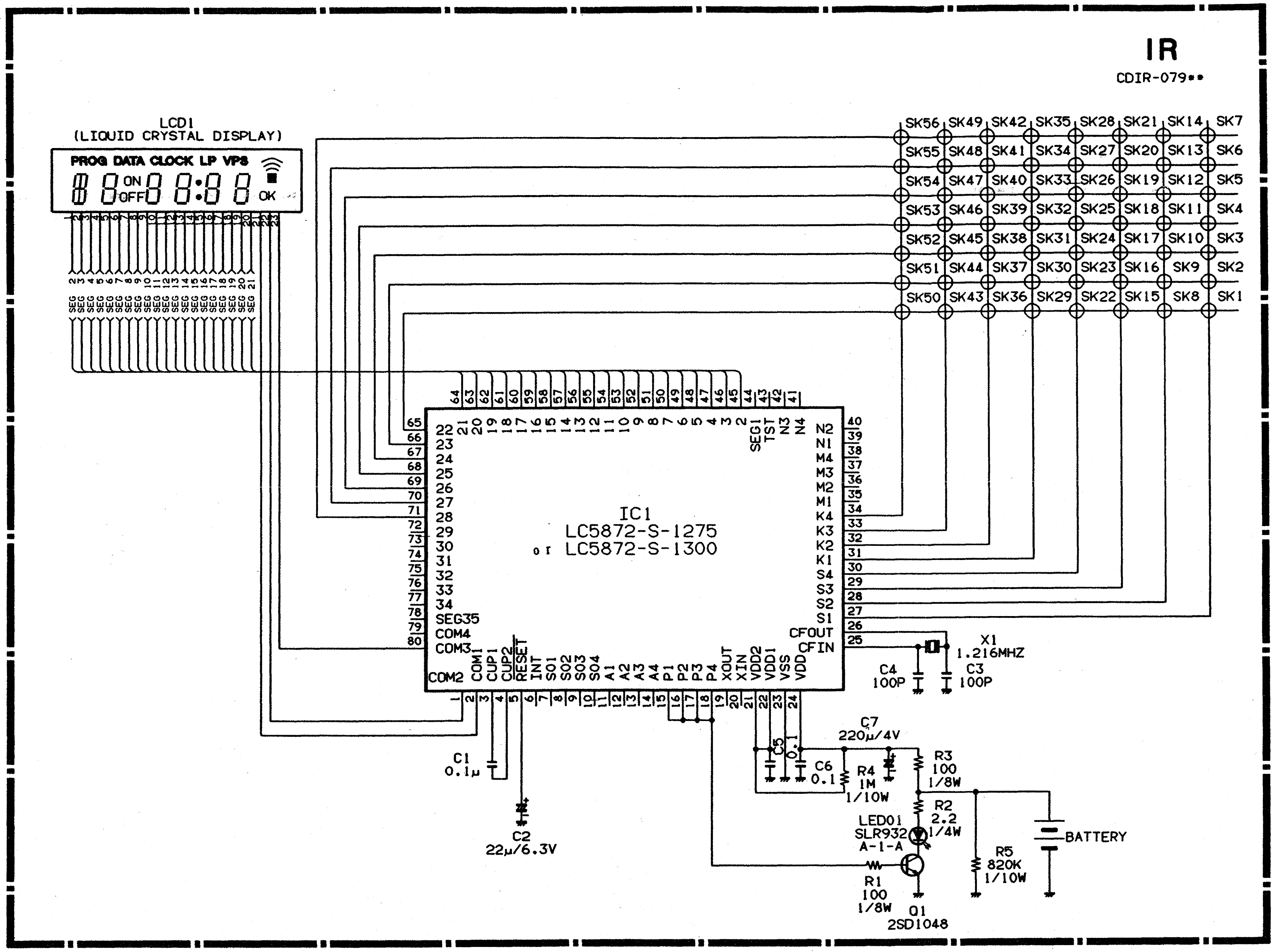
9G/QP

TM-1 P.C.B.


STOP S7012
REW S7001
PLAY S7011
FF S7002
PAUSE S7022
REC
S7021
TR- S7016
TR+ S7006
S7024
PRESET
OK S7025
CH- S7015
CH+ S7005
S7026 DIMMER
S7018 S.T.A.
S7051 AC
VR701
S7050
JK701
A7001
CN701
IC701
IC703
RR701
1AC4B10A56400B
TM-1
@JCI-AUH

9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

IR REMOTE CONTROL CIRCUIT DIAGRAM

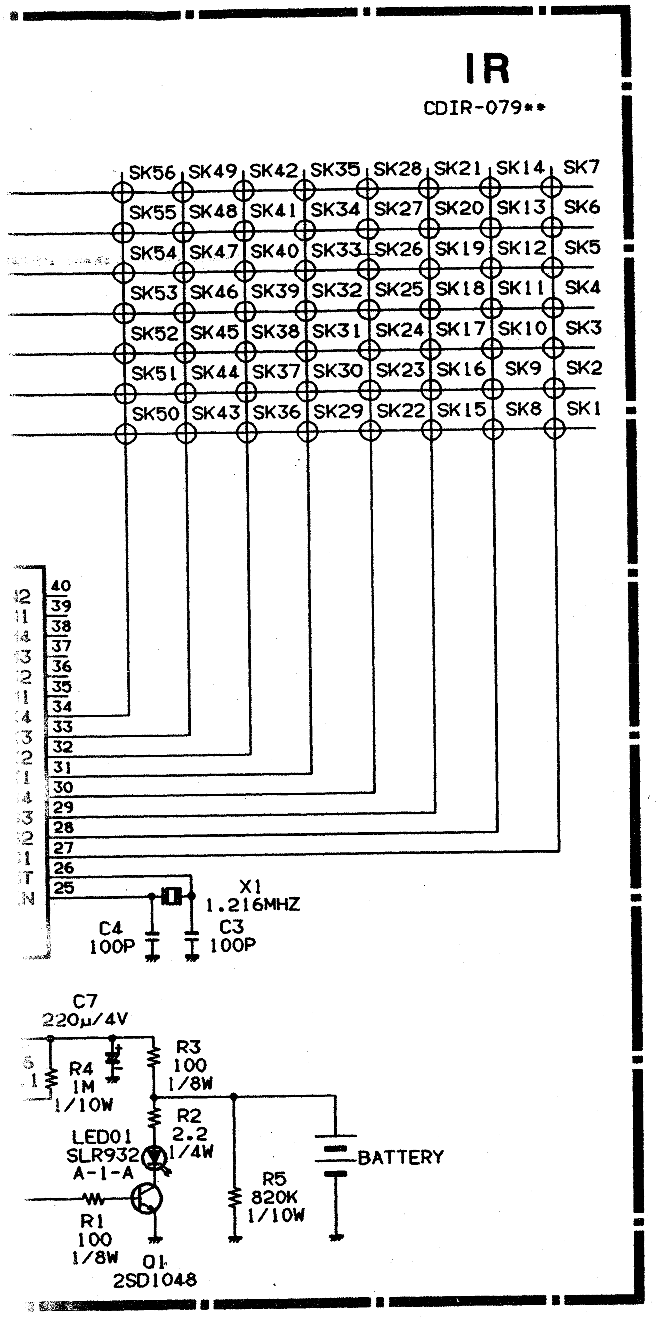

IR
CDIR-079••
LCD1
(LIQUID CRYSTAL DISPLAY)
PROG DATA CLOCK LP VPS
ON
OFF
OK
SEG 2 … SEG 21
SK56 SK49 SK42 SK35 SK28 SK21 SK14 SK7
SK55 SK48 SK41 SK34 SK27 SK20 SK13 SK6
SK54 SK47 SK40 SK33 SK26 SK19 SK12 SK5
SK53 SK46 SK39 SK32 SK25 SK18 SK11 SK4
SK52 SK45 SK38 SK31 SK24 SK17 SK10 SK3
SK51 SK44 SK37 SK30 SK23 SK16 SK9 SK2
SK50 SK43 SK36 SK29 SK22 SK15 SK8 SK1
IC1
LC5872-S-1275
or LC5872-S-1300
SEG1 TST N3 N4
N2 N1 M4 M3 M2 M1 K4 K3 K2 K1 S4 S3 S2 S1
CFOUT CFIN
SEG35 COM4 COM3 COM2 COM1 CUP1 CUP2 RESET INT SO1 SO2 SO3 SO4 A1 A2 A3 A4 P1 P2 P3 P4 XOUT XIN VDD2 VDD1 VSS VDD
X1
1.216MHZ
C4
100P
C3
100P
C1
0.1μ
C2
22μ/6.3V
C7
220μ/4V
C5
0.1
C6
0.1
R4
1M
1/10W
R3
100
1/8W
R2
2.2
1/4W
LED01
SLR932
A-1-A
R1
100
1/8W
Q1
2SD1048
R5
820K
1/10W
BATTERY

AVAILABLE KEY FUNCTION OF REMOTE CONTROL UNIT (FVH-P1400S & FVH-P1400DK)

KEY NO.	FUNCTION	
1	POWER	USE
2	SUBTITLE	
3	VPS	USE
4	SP/LP	USE
5	TRANS	USE
6	● REC	USE
7	A.DUB	
8	CLOCK	USE
9	1	USE
10	2	USE
11	3	USE
12	VCR/TV	
13	● REC	USE
14	INSERT	
15	PROG	USE
16	4	USE
17	5	USE
18	6	USE
19	▲ CH+	USE
20	■ STOP	USE
21	MODE-	USE
22	CHECK	USE
23	7	USE
24	8	USE
25	9	USE
26	▼ CH-	USE
27	■ STOP	USE
28	MODE+	USE
29	OSA	USE
30	CL	USE
31	0/AV	USE
32	OK	USE
33	MONITOR	USE
34	❚❚ PAUSE/STILL	USE
35	SLOW	USE
36	VPT	
37	RED	
38	GREEN	
39	YELLOW	
40	BLUE	
41	ERASE	
42	A.SEL	
43	TEXT	
44	SPECIAL	USE
45	INDEX	USE
46	RESET	USE
47	MEMORY	USE
48	MARK	
49	C.DISP	
50	ATR	USE
51	◀◀ REW/◀◀	USE
52	PLAY ▶	USE
53		
54	▶▶/FF ▶▶	USE
55	SC	

IR-07903

RAM


IR
CDIR-079**
SK56 SK49 SK42 SK35 SK28 SK21 SK14 SK7
SK55 SK48 SK41 SK34 SK27 SK20 SK13 SK6
SK54 SK47 SK40 SK33 SK26 SK19 SK12 SK5
SK53 SK46 SK39 SK32 SK25 SK18 SK11 SK4
SK52 SK45 SK38 SK31 SK24 SK17 SK10 SK3
SK51 SK44 SK37 SK30 SK23 SK16 SK9 SK2
SK50 SK43 SK36 SK29 SK22 SK15 SK8 SK1
40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25
X1
1.216MHZ
C4
100P
C3
100P
C7
220μ/4V
R4
1M
1/10W
R3
100
1/8W
R2
2.2
1/4W
LED01
SLR932
A-1-A
BATTERY
R5
820K
1/10W
R1
100
1/8W
Q1
2SD1048

AVAILABLE KEY FUNCTION OF REMOTE CONTROL UNIT (FVH-P1400S & FVH-P1400DK)

KEY NO.	FUNCTION	
1	POWER	USE
2	SUBTITLE	
3	VPS	USE
4	SP/LP	USE
5	TRANS	USE
6	● REC	USE
7	A.DUB	
8	CLOCK	USE
9	1	USE
10	2	USE
11	3	USE
12	VCR/TV	
13	● REC	USE
14	INSERT	
15	PROG	USE
16	4	USE
17	5	USE
18	6	USE
19	▲ CH+	USE
20	■ STOP	USE
21	MODE-	USE
22	CHECK	USE
23	7	USE
24	8	USE
25	9	USE
26	▼ CH-	USE
27	■ STOP	USE
28	MODE+	USE
29	OSA	USE
30	CL	USE
31	0/AV	USE
32	OK	USE
33	MONITOR	USE
34	▮▮ PAUSE/STILL	USE
35	SLOW	USE
36	VPT	
37	RED	
38	GREEN	
39	YELLOW	
40	BLUE	
41	ERASE	
42	A.SEL	
43	TEXT	
44	SPECIAL	USE
45	INDEX	USE
46	RESET	USE
47	MEMORY	USE
48	MARK	
49	C.DISP	
50	ATR	USE
51	◀◀ REW/⏪	USE
52	PLAY ▶	USE
53		
54	⏩/FF ▶▶	USE
55	SC	

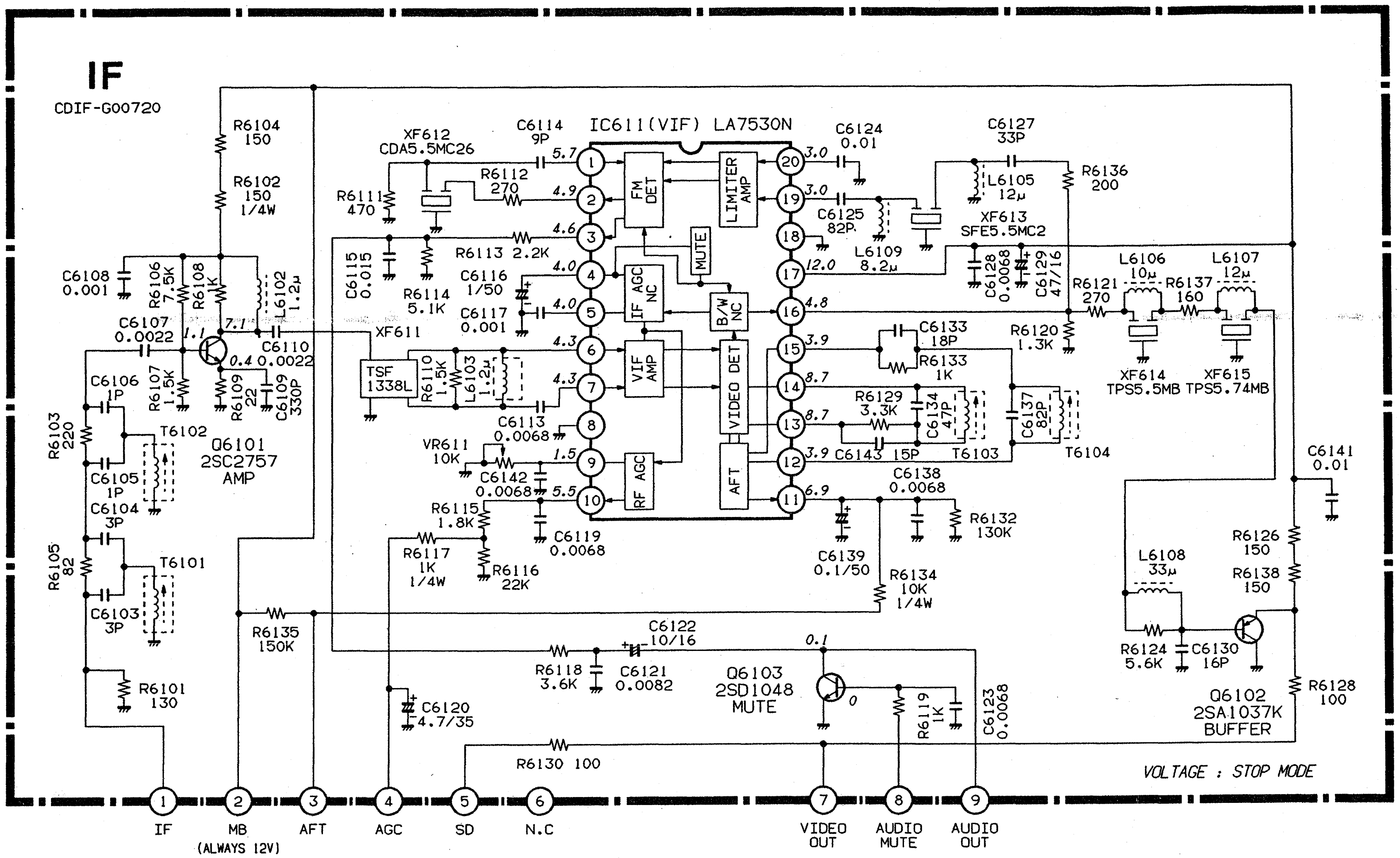
IR-07903

AVAILABLE KEY FUNCTION OF REMOTE CONTROL UNIT (FVH-P1440S)

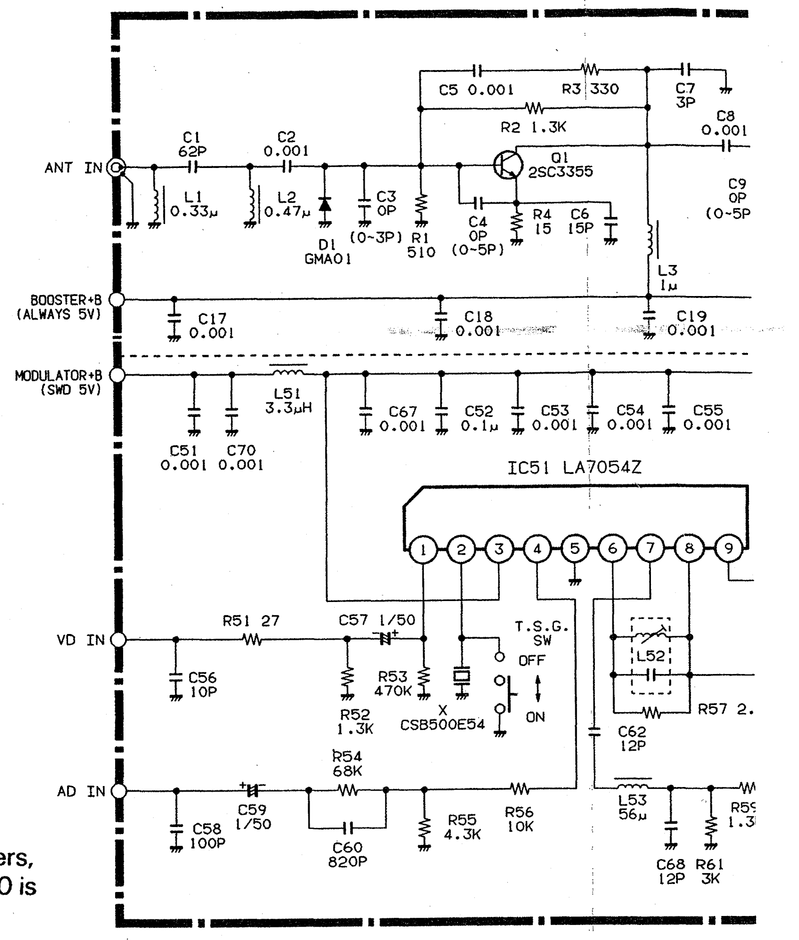
KEY NO.	FUNCTION		
1	POWER		USE
2	SUBTITLE		
3	VPS		USE
4	SP/LP		USE
5	TRANS		USE
6	● REC		USE
7	A.DUB		
8	CLOCK		USE
9	1		USE
10	2		USE
11	3		USE
12	VCR/TV		
13	● REC		USE
14	INSERT		
15	PROG		USE
16	4		USE
17	5		USE
18	6		USE
19	▲ CH+		USE
20	■ STOP		USE
21	MODE-		USE
22	CHECK		USE
23	7		USE
24	8		USE
25	9		USE
26	▼ CH-		USE
27	■ STOP		USE
28	MODE+		USE
29		MENU	USE
30	CL		USE
31	0/AV		USE
32	OK		USE
33	MONITOR	TV	USE
34	▮▮ PAUSE/STILL		USE
35	SLOW		USE
36		VPT	USE
37	RED		USE
38	GREEN		USE
39	YELLOW		USE
40	BLUE		USE
41	ERASE		
42	A.SEL		
43		TEXT	USE
44	SPECIAL	[☰?] REVEAL	USE
45	INDEX	EXP	USE
46	RESET	TIME	USE
47	MEMORY	HALT	USE
48	MARK		
49	C.DISP		
50	ATR		USE
51	◀◀ REW/⏪		USE
52	PLAY ▶		USE
53			
54	⏩/FF ▶▶		USE
55	SC		

IR-07905

IF CIRCUIT DIAGRAM (FVH-P1400S & FVH-P1440S)

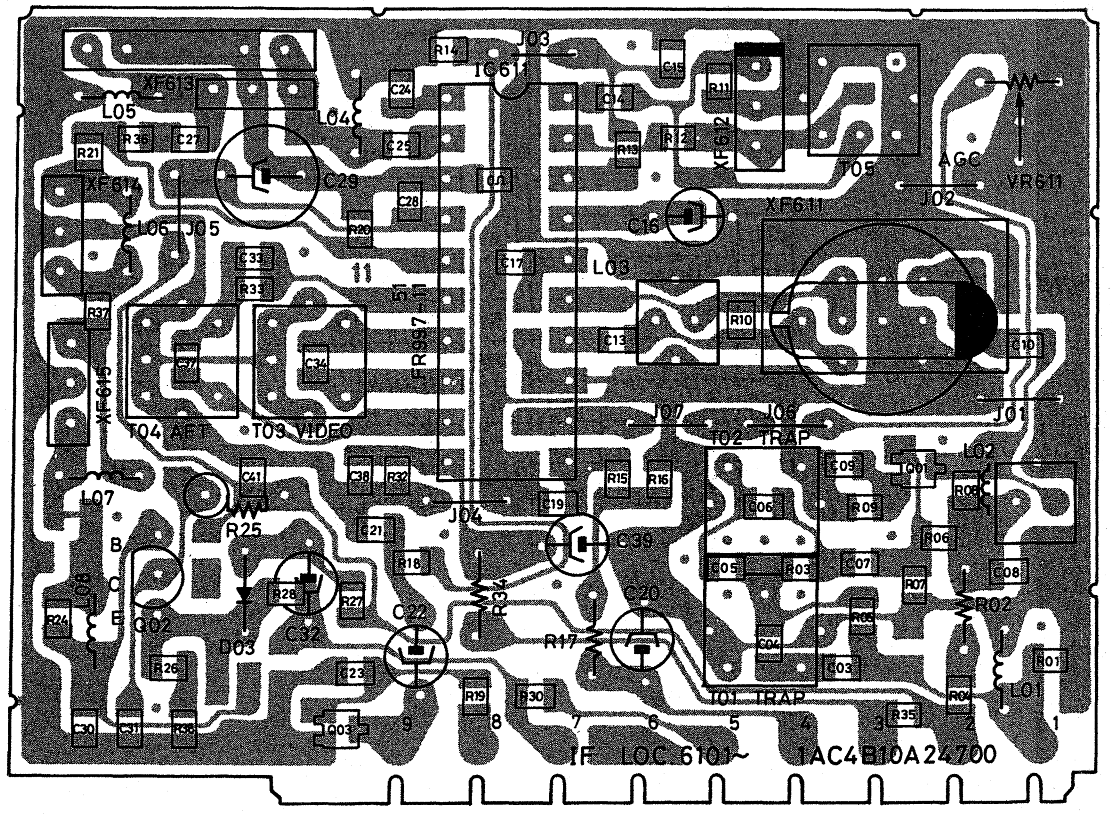

IF
CDIF-G00720
IC611 (VIF) LA7530N
XF612 CDA5.5MC26
XF613 SFE5.5MC2
XF611
TSF 1338L
XF614 TPS5.5MB
XF615 TPS5.74MB
FM DET
LIMITER AMP
MUTE
IF AGC NC
B/W NC
VIF AMP
VIDEO DET
RF AGC
AFT
Q6101 2SC2757 AMP
Q6102 2SA1037K BUFFER
Q6103 2SD1048 MUTE
T6101
T6102
T6103
T6104
VR611 10K
VOLTAGE : STOP MODE
IF
MB (ALWAYS 12V)
AFT
AGC
SD
N.C
VIDEO OUT
AUDIO MUTE
AUDIO OUT

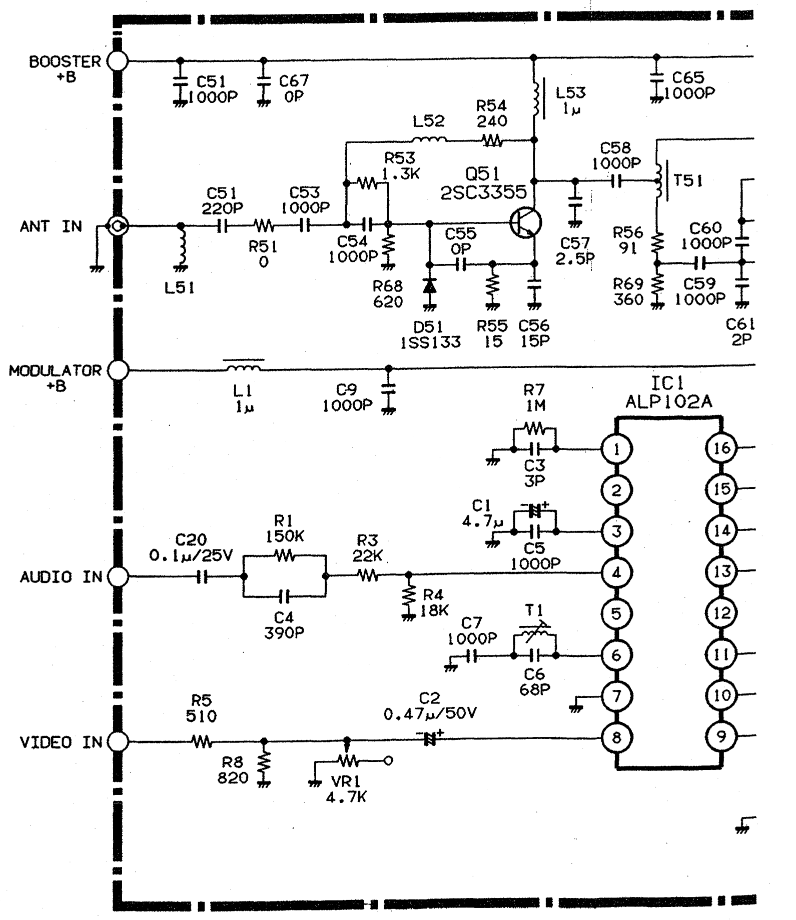
RF CONVERTER CIRCUIT DIA

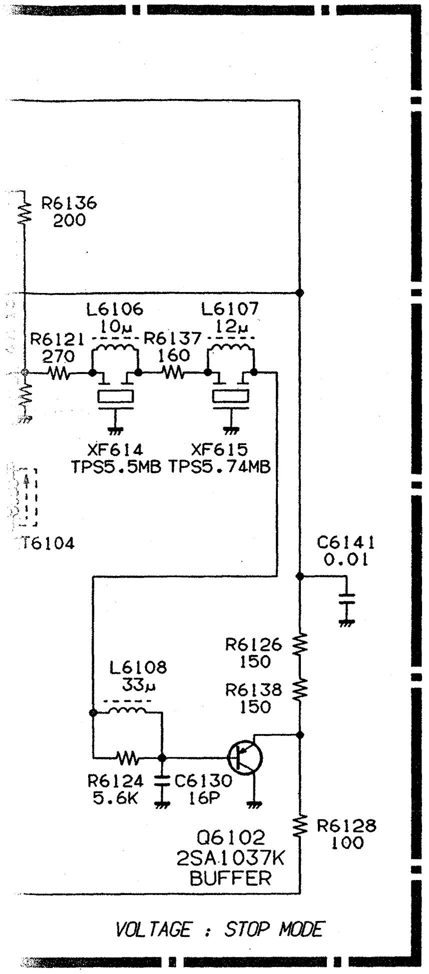

ANT IN
BOOSTER+B (ALWAYS 5V)
MODULATOR+B (SWD 5V)
VD IN
AD IN
Q1 2SC3355
D1 GMA01
IC51 LA7054Z
T.S.G. SW
OFF
ON
X CSB500E54

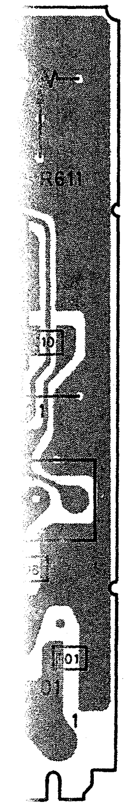
Note: Either one of these RF converters, type CDRF-G00010 or CDRF-G00740 is used, depending on availability.

IF P.C.B.

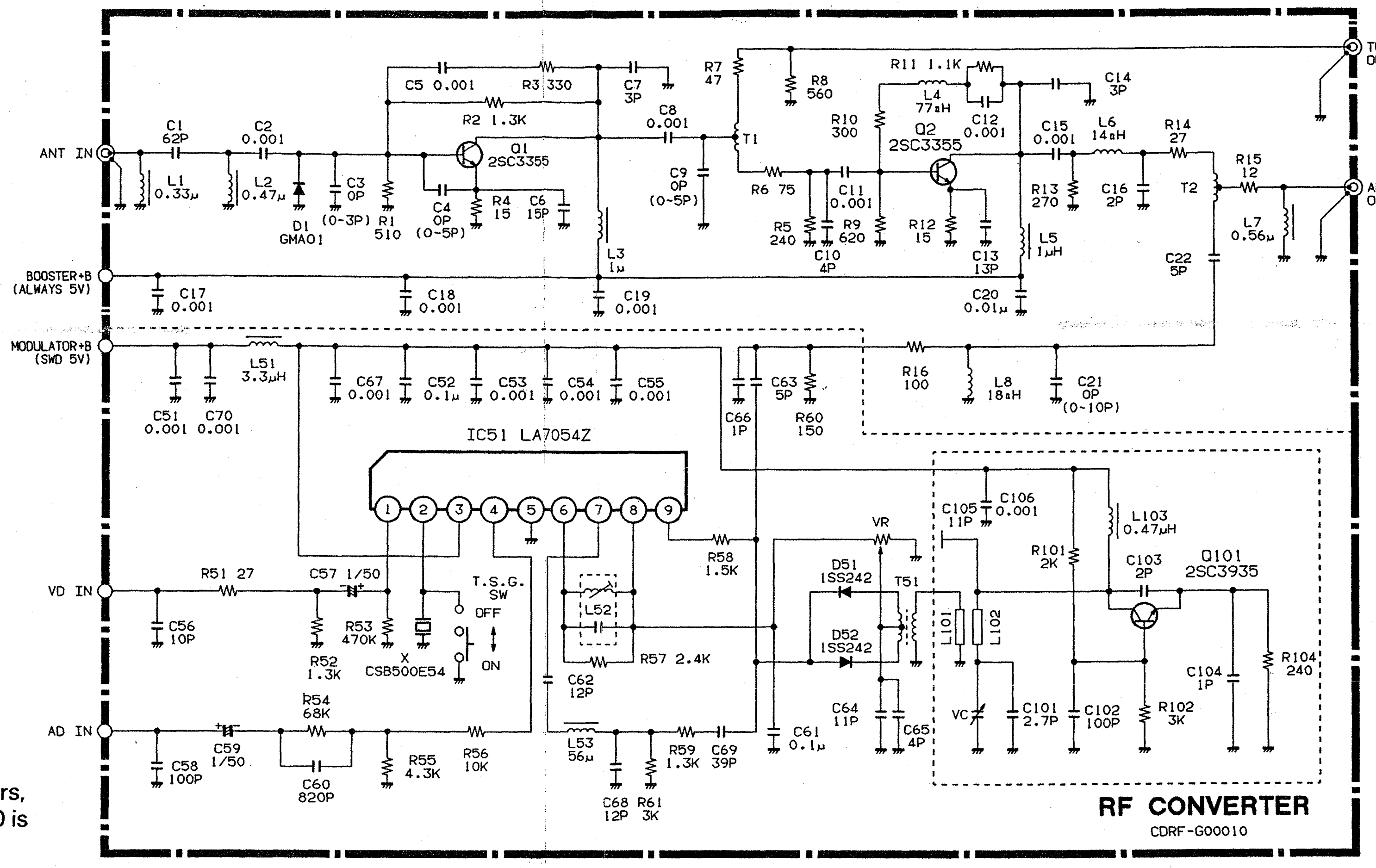

XF613
L05
XF614
XF615
L06
J05
L04
C29
IC611
J03
XF612
T05
AGC
VR611
J02
XF611
C16
L03
T04 AFT
T03 VIDEO
T02
J07
J06 TRAP
J01
L07
R25
Q02
D03
C32
C22
J04
C39
C20
R17
R34
T01 TRAP
L02
R02
L01
IF LOC.6101~
1AC4B10A24700


BOOSTER +B
ANT IN
MODULATOR +B
AUDIO IN
VIDEO IN
Q51 2SC3355
D51 1SS133
T51
IC1 ALP102A
VR1 4.7K

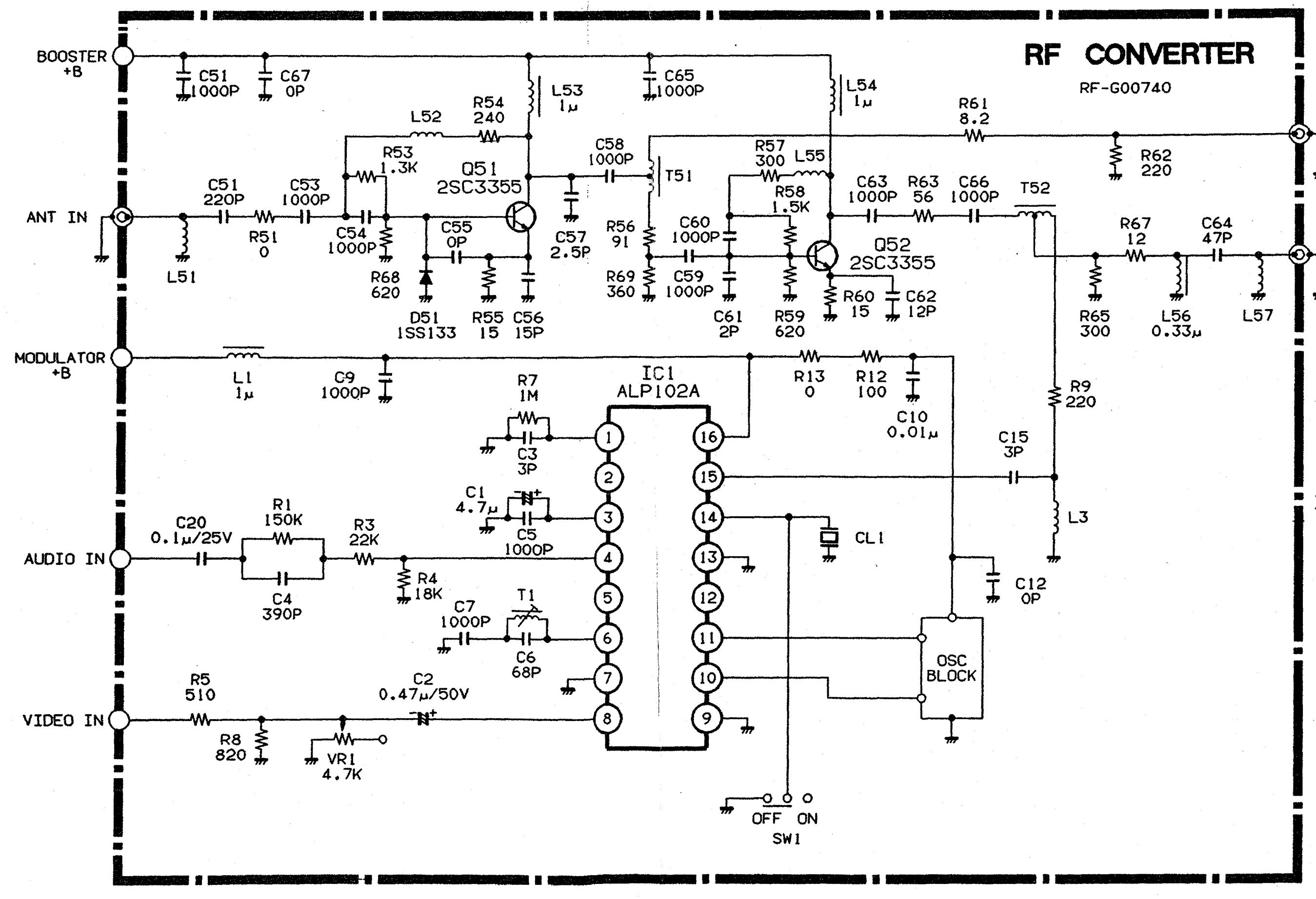

R6136
200
L6106
10μ
L6107
12μ
R6121
270
R6137
160
XF614
TPS5.5MB
XF615
TPS5.74MB
T6104
C6141
0.01
L6108
33μ
R6126
150
R6138
150
R6124
5.6K
C6130
16P
Q6102
2SA1037K
BUFFER
R6128
100
VOLTAGE : STOP MODE

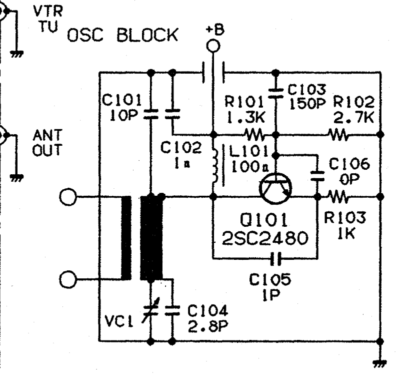


RF CONVERTER CIRCUIT DIAGRAM (FVH-P1400S & FVH-P1440S)

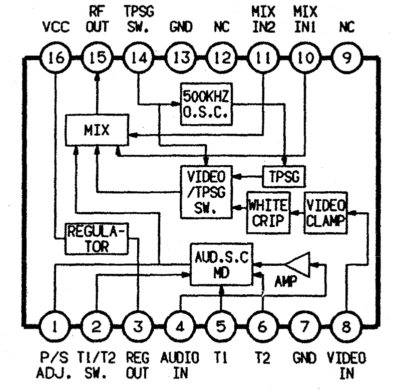

ANT IN
BOOSTER+B
(ALWAYS 5V)
MODULATOR+B
(SWD 5V)
VD IN
AD IN
TUNER OUT
ANT OUT
Q1
2SC3355
Q2
2SC3355
D1
GMA01
IC51 LA7054Z
T.S.G.
SW
OFF
ON
X
CSB500E54
D51
1SS242
D52
1SS242
T51
L52
VR
Q101
2SC3935
L101
L102
RF CONVERTER
CDRF-G00010

Note: Either one of these RF converters, type CDRF-G00010 or CDRF-G00740 is used, depending on availability.

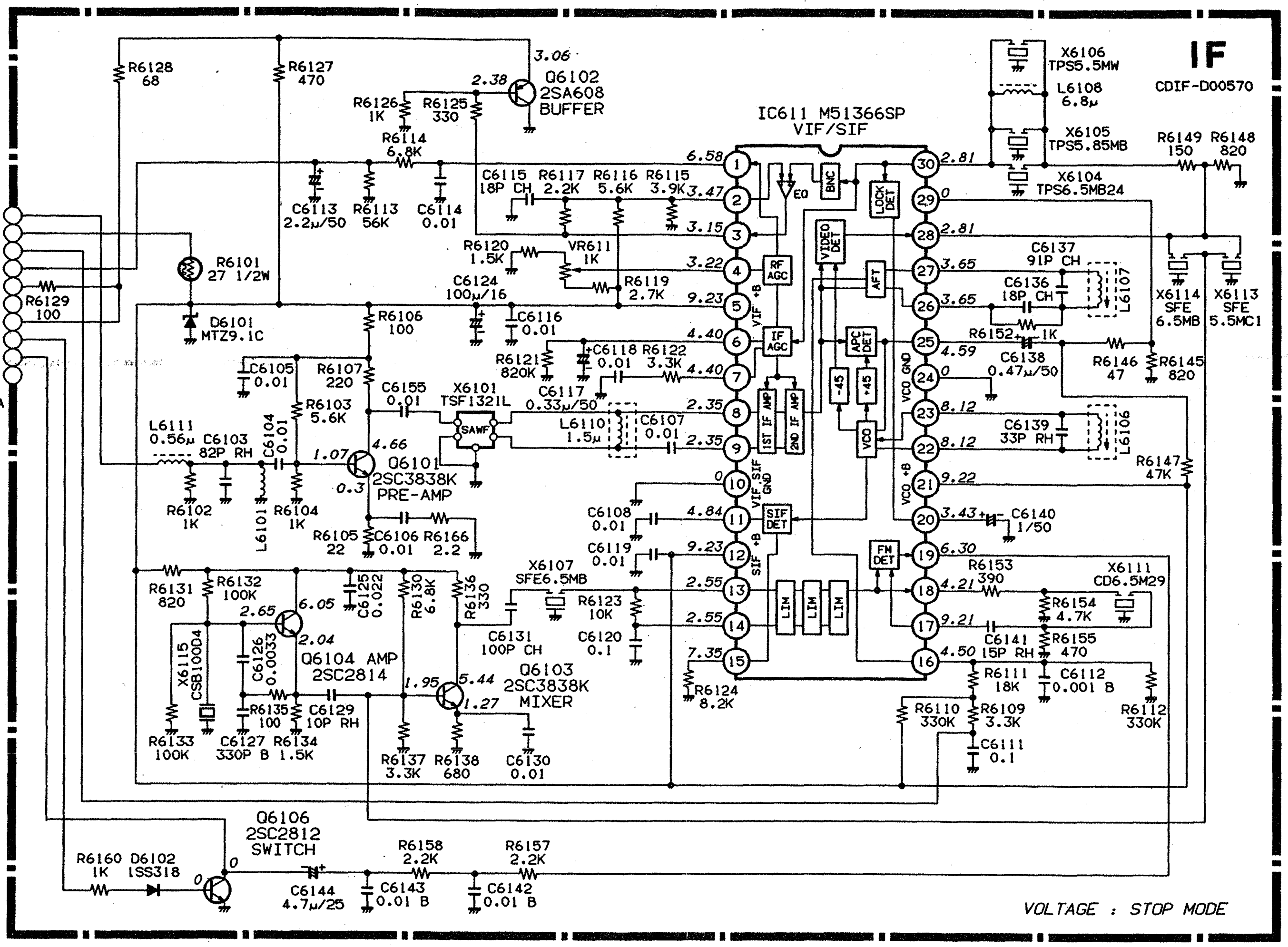

RF CONVERTER
RF-G00740
BOOSTER
+B
ANT IN
MODULATOR
+B
AUDIO IN
VIDEO IN
VTR
TU
ANT
OUT
Q51
2SC3355
Q52
2SC3355
D51
1SS133
T51
T52
IC1
ALP102A
CL1
OSC
BLOCK
OFF
ON
SW1


OSC BLOCK
+B
Q101
2SC2480
VC1

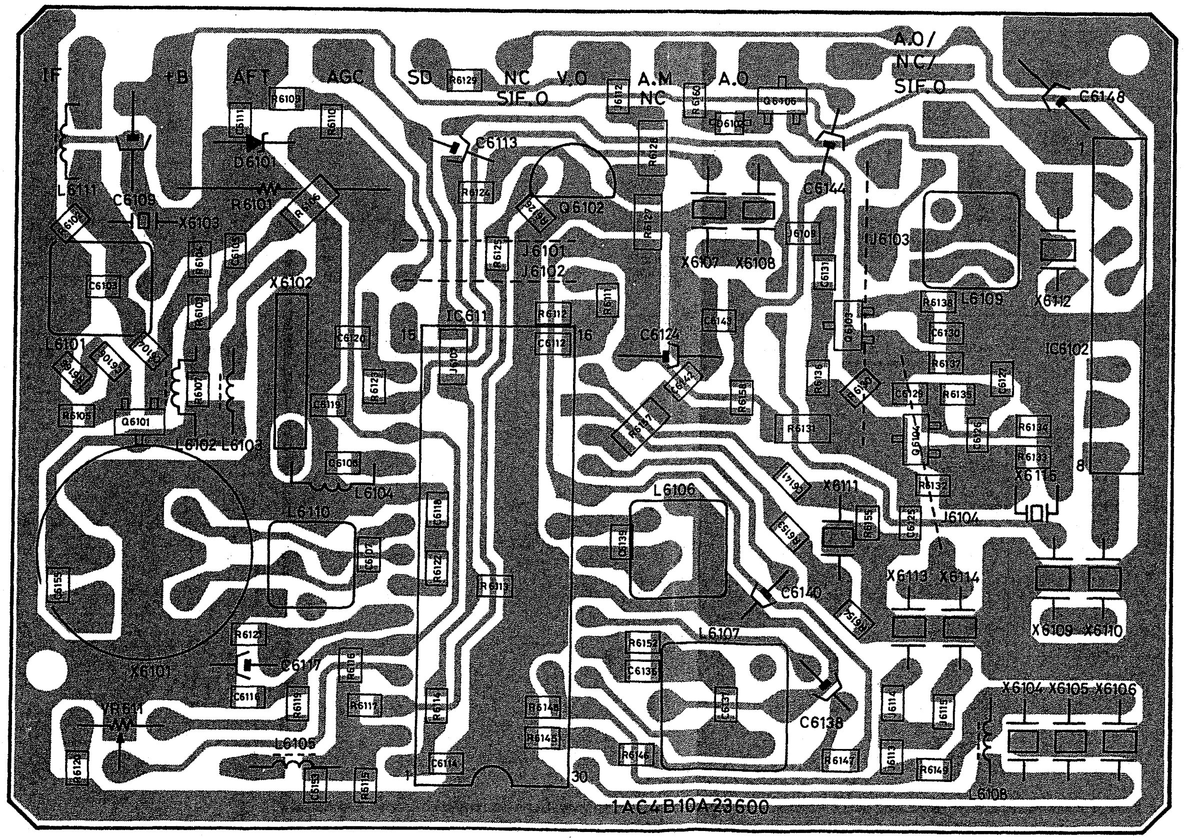
IC1 BLOCK DIAGRAM


VCC
RF OUT
TPSG SW.
GND
NC
MIX IN2
MIX IN1
NC
500KHZ O.S.C.
MIX
VIDEO /TPSG SW.
TPSG
WHITE CRIP
VIDEO CLAMP
REGULA-TOR
AUD.S.C MD
AMP
P/S ADJ.
T1/T2 SW.
REG OUT
AUDIO IN
T1
T2
GND
VIDEO IN

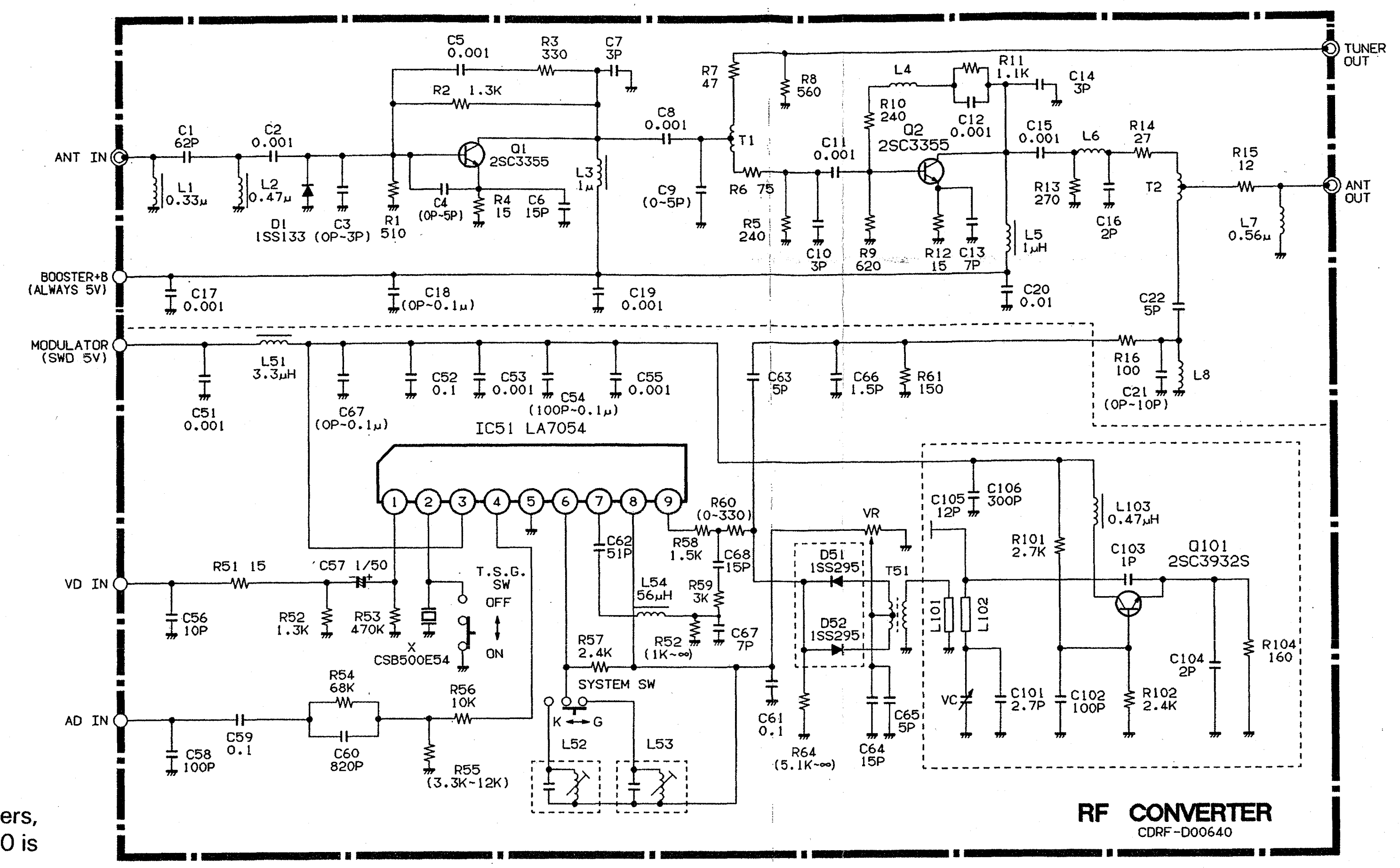
IF CIRCUIT DIAGRAM (FVH-P1400DK)


IF
CDIF-D00570
IC611 M51366SP
VIF/SIF
Q6102
2SA608
BUFFER
Q6101
2SC3838K
PRE-AMP
Q6104 AMP
2SC2814
Q6103
2SC3838K
MIXER
Q6106
2SC2812
SWITCH
D6101
MTZ9.1C
D6102
1SS318
X6101
TSF1321L
X6104
TPS6.5MB24
X6105
TPS5.85MB
X6106
TPS5.5MW
X6107
SFE6.5MB
X6111
CD6.5M29
X6113
SFE
5.5MC1
X6114
SFE
6.5MB
X6115
CSB100D4
L6108
6.8μ
L6110
1.5μ
L6111
0.56μ
R6101
27 1/2W
R6128
68
R6127
470
R6126
1K
R6125
330
R6114
6.8K
R6149 150
R6148 820
VR611
1K
IF
MB
AFT C
AGC
SD
N.C.
V.OUT
A.MUTE
A.OUT
N.C.
TO TN-A
RF AGC
IF AGC
VIDEO DET
LOCK DET
BNC
AFT
APC DET
VCO
1ST IF AMP
2ND IF AMP
SIF DET
FM DET
LIM
VIF +B
VIF GND
SIF GND
SIF +B
VCO GND
VCO +B
VOLTAGE : STOP MODE

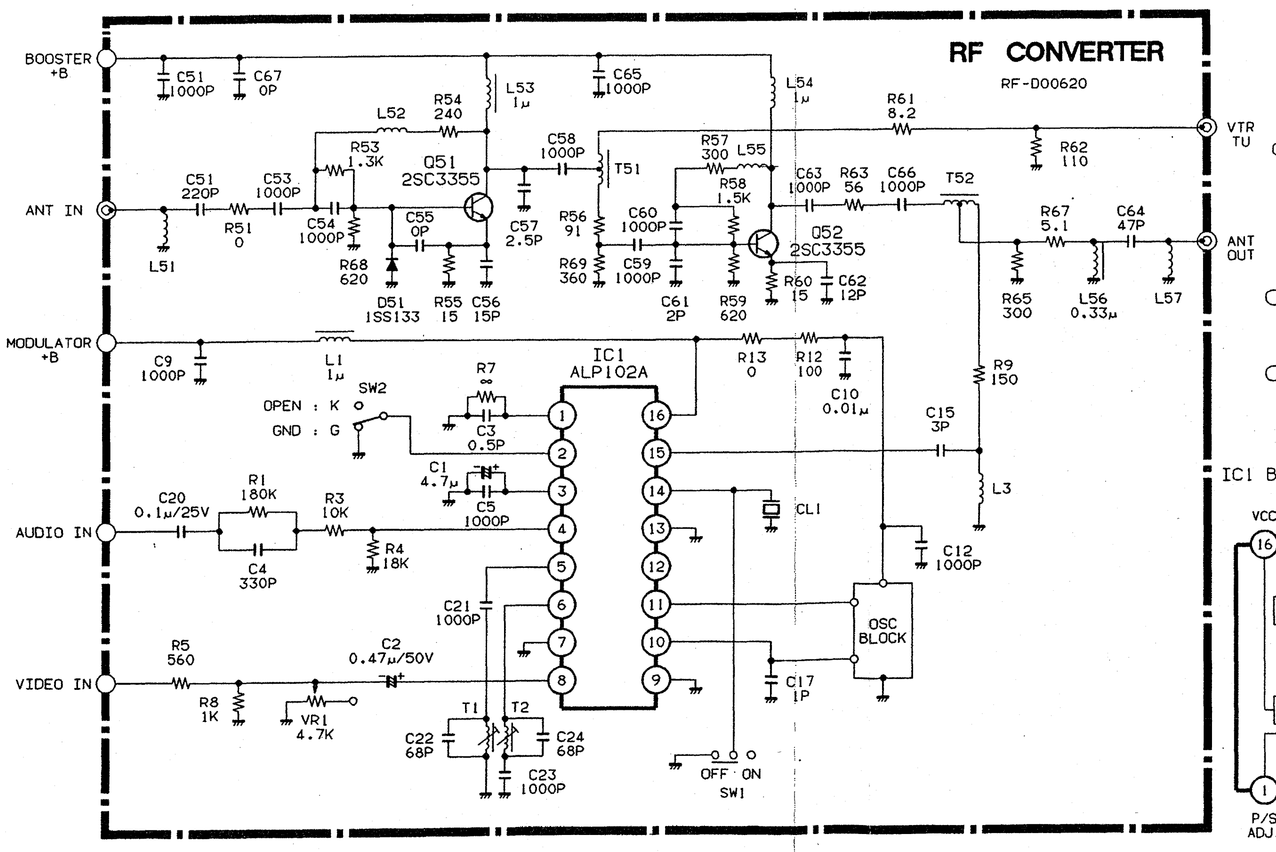
IF P.C.B.

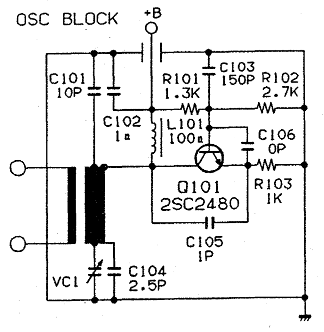

IF
+B
AFT
AGC
SD
NC
SIF.O
V.O
A.M
NC
A.O
A.O/
NC/
SIF.O
IC611
IC6102
IC6103
Q6101
Q6102
X6101
X6102
X6103
X6107
X6108
X6109
X6110
X6111
X6112
X6113
X6114
X6104 X6105 X6106
L6101
L6102
L6103
L6104
L6105
L6106
L6107
L6108
L6109
L6110
L6111
1AC4B10A23600

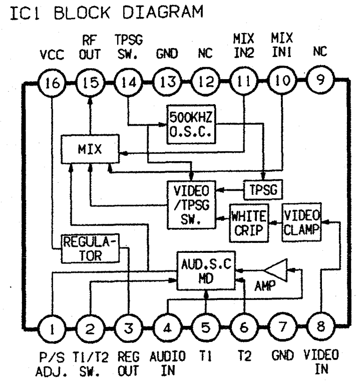
RF CONVERTER CIRCUIT DIAGRAM (FVH-P1400DK)


ANT IN
BOOSTER+B (ALWAYS 5V)
MODULATOR (SWD 5V)
VD IN
AD IN
TUNER OUT
ANT OUT
Q1 2SC3355
Q2 2SC3355
D1 1SS133
IC51 LA7054
T.S.G. SW OFF ON
SYSTEM SW
K G
X CSB500E54
D51 1SS295
D52 1SS295
Q101 2SC3932S
L101
L102
VR
VC
RF CONVERTER
CDRF-D00640

Note: Either one of these RF converters, type CDRF-D00640 or CDRF-D00620 is used, depending on availability.


RF CONVERTER
RF-D00620
BOOSTER +B
ANT IN
MODULATOR +B
AUDIO IN
VIDEO IN
VTR TU
ANT OUT
Q51 2SC3355
Q52 2SC3355
D51 1SS133
IC1 ALP102A
SW2
OPEN : K
GND : G
OSC BLOCK
CL1
OFF ON
SW1
T1
T2
VR1 4.7K


OSC BLOCK
+B
C101 10P
C102 1u
C103 150P
R101 1.3K
R102 2.7K
L101 100n
C106 0P
Q101 2SC2480
R103 1K
C105 1P
VC1
C104 2.5P


IC1 BLOCK DIAGRAM
VCC
RF OUT
TPSG SW.
GND
NC
NC
MIX IN2
MIX IN1
NC
500KHZ O.S.C.
MIX
VIDEO /TPSG SW.
TPSG
WHITE CRIP
VIDEO CLAMP
REGULATOR
AUD.S.C MD
AMP
P/S ADJ.
T1/T2 SW.
REG OUT
AUDIO IN
T1
T2
GND
VIDEO IN

K

J

I

H

G

F

E

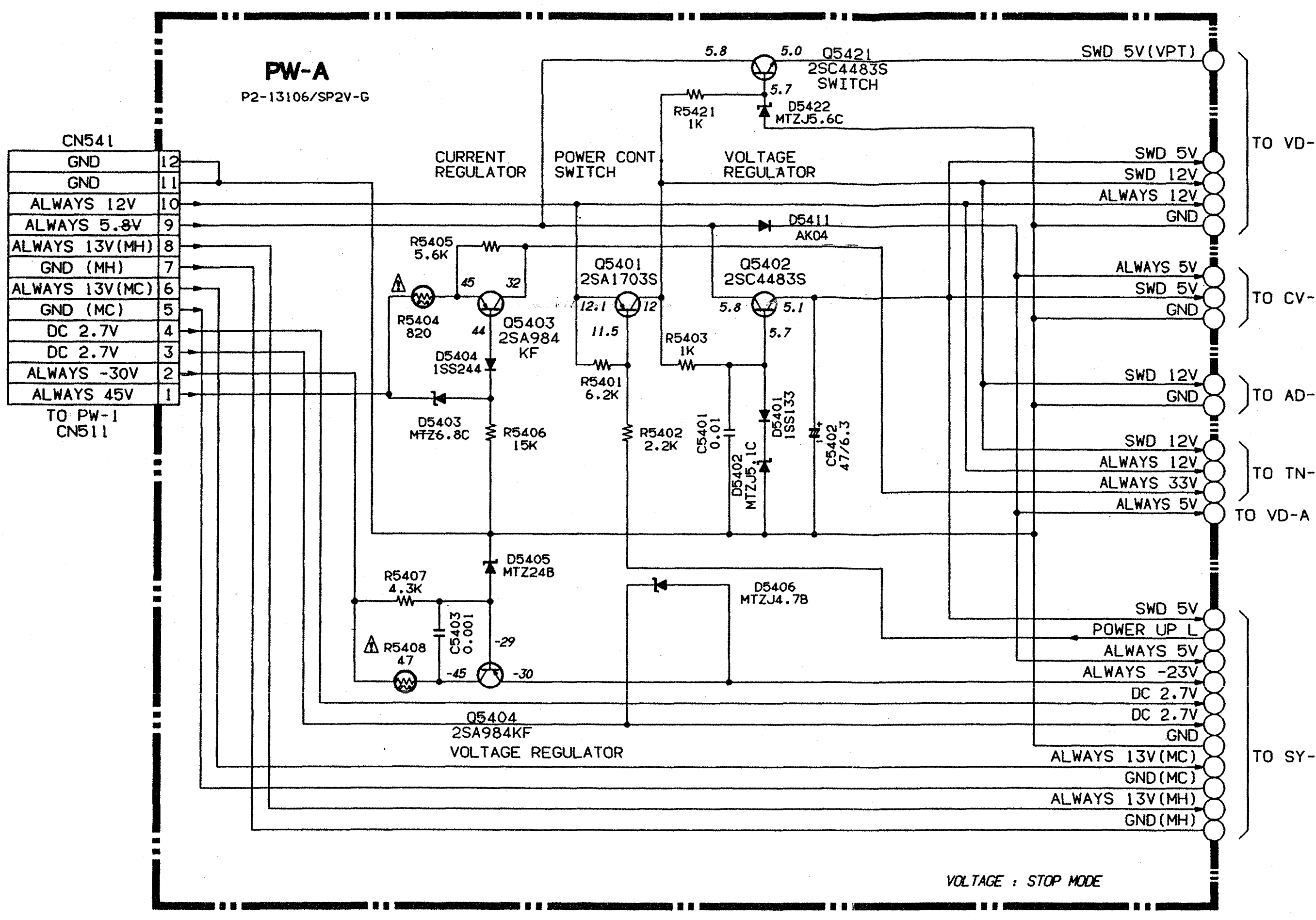
D

C

B

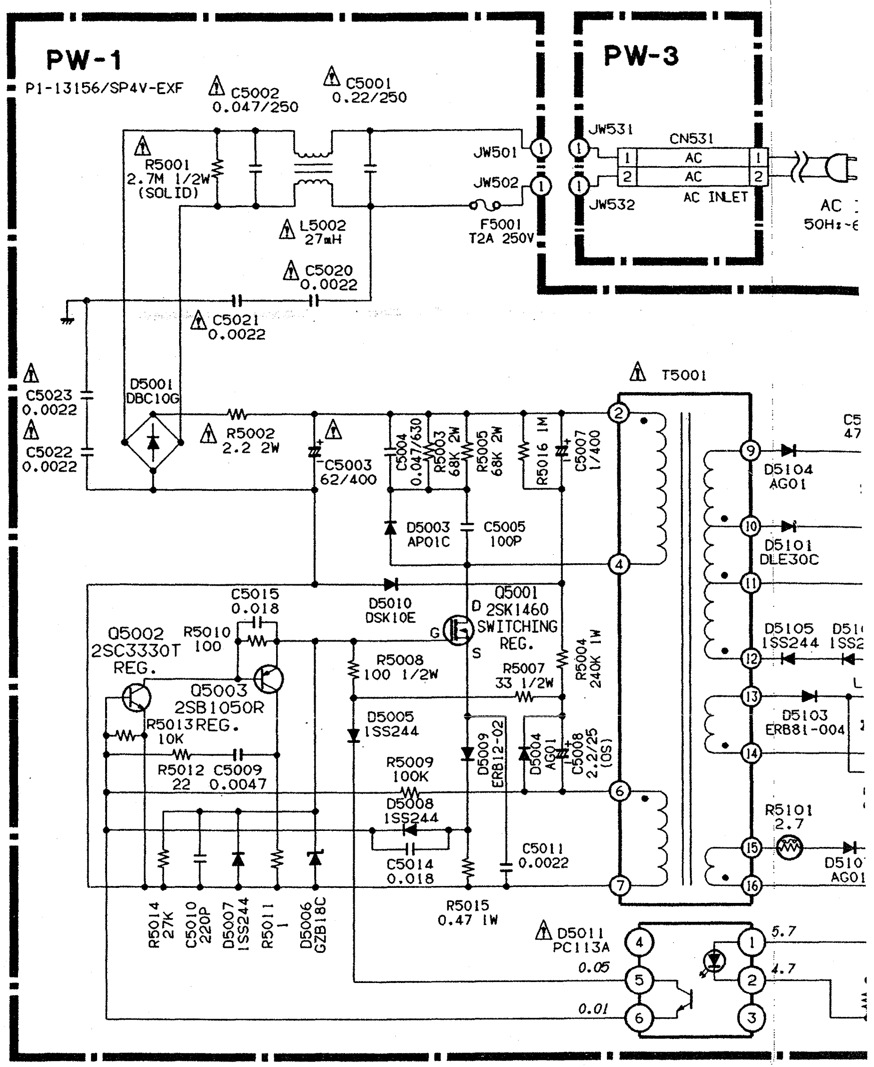
A

CP-1 BOARD (PW-A) POWER SUPPLY CIRCUIT DIAGRAM (FVH-P1440S)



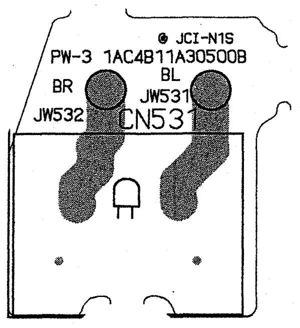
PW-A
P2-13106/SP2V-G
CN541
12 GND
11 GND
10 ALWAYS 12V
9 ALWAYS 5.8V
8 ALWAYS 13V(MH)
7 GND (MH)
6 ALWAYS 13V(MC)
5 GND (MC)
4 DC 2.7V
3 DC 2.7V
2 ALWAYS -30V
1 ALWAYS 45V
TO PW-1 CN511
CURRENT REGULATOR
POWER CONT SWITCH
VOLTAGE REGULATOR
Q5421 2SC4483S SWITCH
R5421 1K
D5422 MTZJ5.6C
D5411 AK04
R5405 5.6K
R5404 820
Q5403 2SA984 KF
D5404 1SS244
D5403 MTZ6.8C
R5406 15K
Q5401 2SA1703S
R5401 6.2K
R5402 2.2K
R5403 1K
Q5402 2SC4483S
C5401 0.01
D5401 1SS133
D5402 MTZJ5.1C
C5402 47/6.3
D5405 MTZ24B
R5407 4.3K
R5408 47
C5403 0.001
Q5404 2SA984KF
VOLTAGE REGULATOR
D5406 MTZJ4.7B
SWD 5V(VPT)
SWD 5V
SWD 12V
ALWAYS 12V
GND
TO VD-A
ALWAYS 5V
SWD 5V
GND
TO CV-A
SWD 12V
GND
TO AD-A
SWD 12V
ALWAYS 12V
ALWAYS 33V
TO TN-A
ALWAYS 5V
TO VD-A
SWD 5V
POWER UP L
ALWAYS 5V
ALWAYS -23V
DC 2.7V
DC 2.7V
GND
ALWAYS 13V(MC)
GND(MC)
ALWAYS 13V(MH)
GND(MH)
TO SY-A
VOLTAGE : STOP MODE

PW-1, 2, 3 BOARD POWER SUPPLY CIRCUI



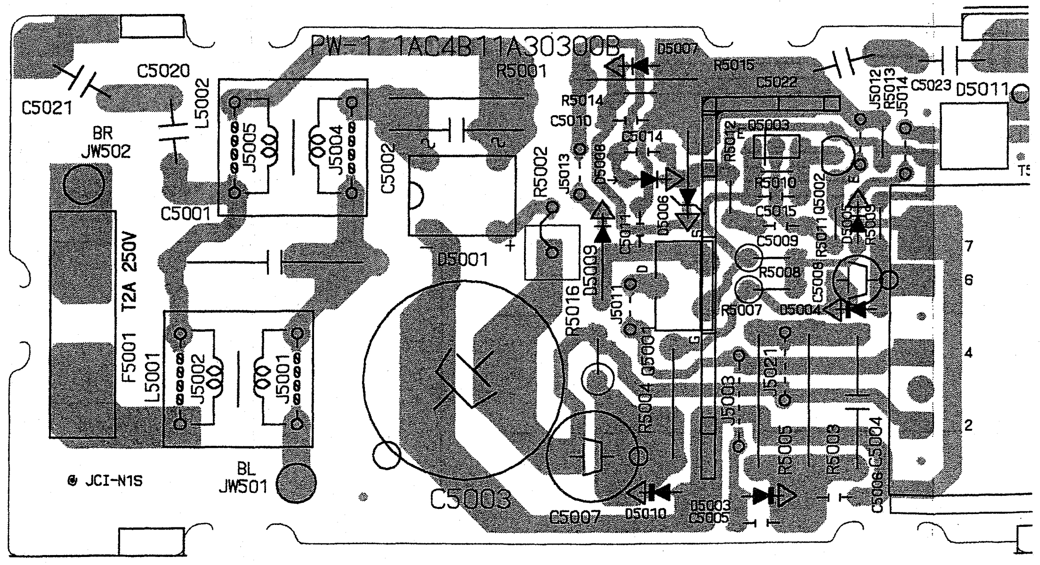
PW-1
P1-13156/SP4V-EXF
PW-3
C5002 0.047/250
C5001 0.22/250
R5001 2.7M 1/2W (SOLID)
L5002 27mH
C5020 0.0022
C5021 0.0022
JW501
JW502
F5001 T2A 250V
JW531
JW532
CN531
AC
AC INLET
C5023 0.0022
C5022 0.0022
D5001 DBC10G
R5002 2.2 2W
C5003 62/400
T5001
D5003 AP01C
C5005 100P
D5104 AG01
D5101 DLE30C
D5105 1SS244
D5103 ERB81-004
R5101 2.7
C5015 0.018
D5010 DSK10E
Q5001 2SK1460 SWITCHING REG.
Q5002 2SC3330T REG.
R5010 100
Q5003 2SB1050R REG.
R5013 10K
R5008 100 1/2W
R5007 33 1/2W
R5004 240K 1W
D5005 1SS244
R5009 100K
R5012 22
C5009 0.0047
D5008 1SS244
D5009 ERB12-02
D5004 AG01
C5008 2.2/25
C5014 0.018
C5011 0.0022
R5014 27K
C5010 220P
D5007 1SS244
R5011 1
D5006 GZB18C
R5015 0.47 1W
D5011 PC113A

PW-3 P.C.B.



JCI-N1S
PW-3 1AC4B11A30500B
BR
BL
JW532
JW531
CN531

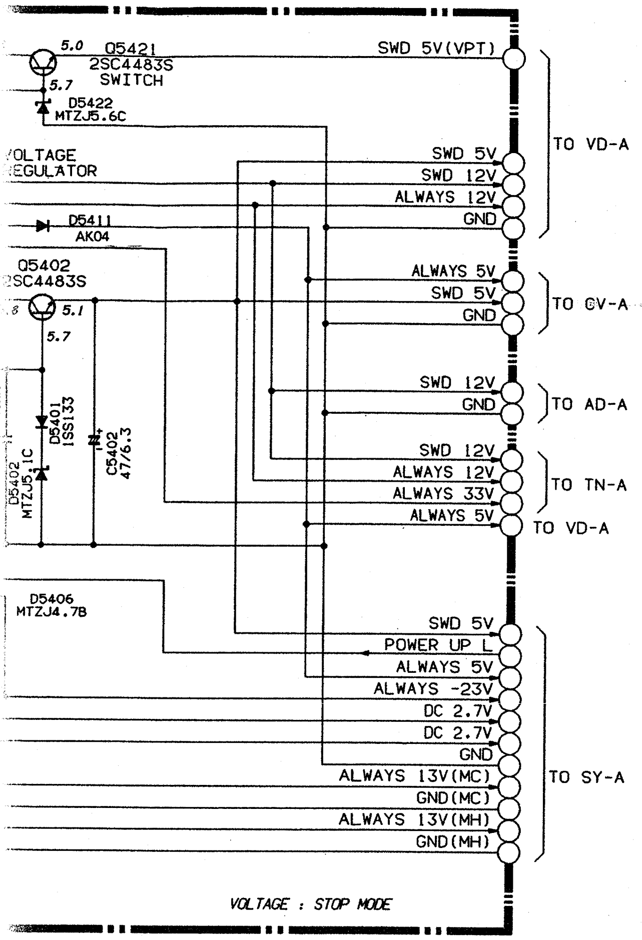
PW-1 P.C.B.



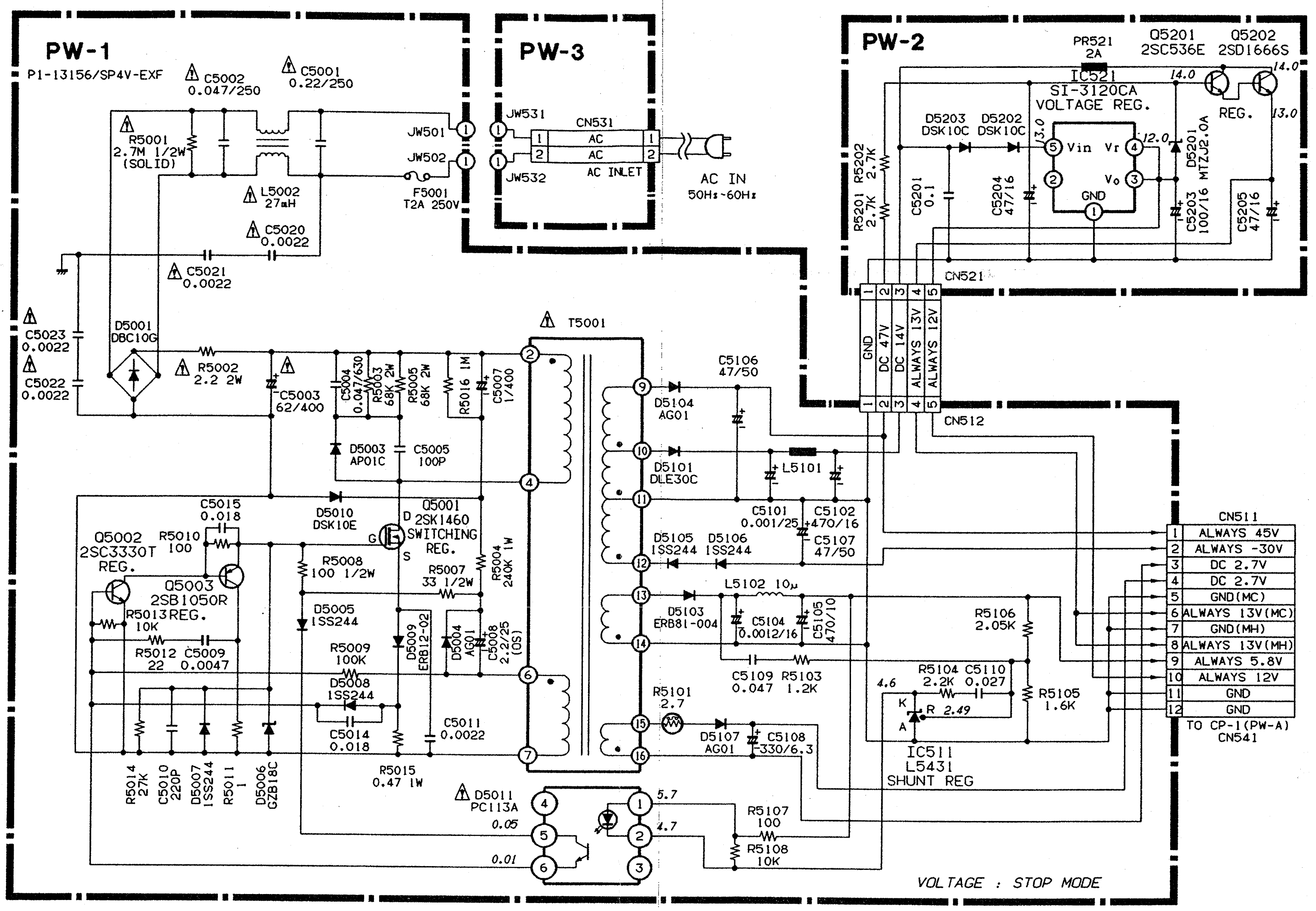
PW-1 1AC4B11A30300B
C5021
C5020
L5002
BR
JW502
C5001
F5001 T2A 250V
L5001
J5002
J5001
J5005
J5004
C5002
R5001
D5001
C5003
C5007
BL
JW501
JCI-N1S
R5002
R5016
D5010
R5004
R5015
C5022
C5023
D5011

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

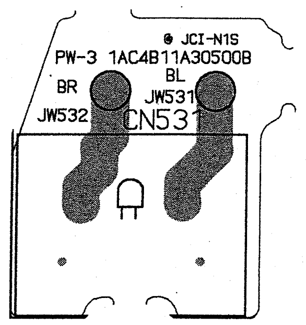
RCUIT DIAGRAM (FVH-P1440S)


Q5421
2SC4483S
SWITCH
D5422
MTZJ5.6C
OLTAGE
EGULATOR
D5411
AK04
Q5402
SC4483S
D5401
1SS133
C5402
47/6.3
D5402
MTZJ5.1C
D5406
MTZJ4.7B
SWD 5V(VPT)
SWD 5V
SWD 12V
ALWAYS 12V
GND
TO VD-A
ALWAYS 5V
SWD 5V
GND
TO CV-A
SWD 12V
GND
TO AD-A
SWD 12V
ALWAYS 12V
ALWAYS 33V
TO TN-A
ALWAYS 5V
TO VD-A
SWD 5V
POWER UP L
ALWAYS 5V
ALWAYS -23V
DC 2.7V
DC 2.7V
GND
ALWAYS 13V(MC)
GND(MC)
ALWAYS 13V(MH)
GND(MH)
TO SY-A
VOLTAGE : STOP MODE

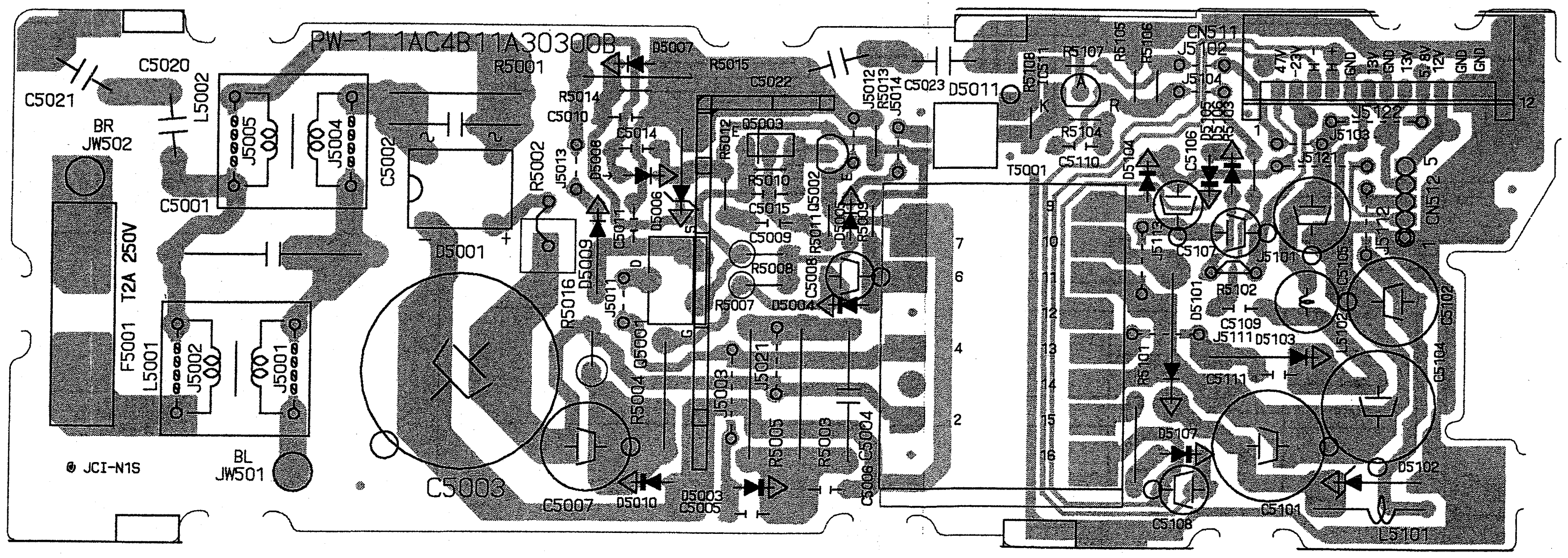
PW-1, 2, 3 BOARD POWER SUPPLY CIRCUIT DIAGRAM (FVH-P1440S)


PW-1
P1-13156/SP4V-EXF
C5002
0.047/250
C5001
0.22/250
R5001
2.7M 1/2W
(SOLID)
L5002
27mH
C5020
0.0022
C5021
0.0022
F5001
T2A 250V
JW501
JW502
PW-3
JW531
JW532
CN531
AC
AC
AC INLET
AC IN
50Hz-60Hz
C5023
0.0022
C5022
0.0022
D5001
DBC10G
R5002
2.2 2W
C5003
62/400
C5004
0.047/630
R5003
68K 2W
R5005
68K 2W
R5016 1M
C5007
1/400
T5001
D5003
AP01C
C5005
100P
C5015
0.018
D5010
DSK10E
Q5001
2SK1460
SWITCHING
REG.
Q5002
2SC3330T
REG.
R5010
100
Q5003
2SB1050R
REG.
R5013
10K
R5012
22
C5009
0.0047
R5008
100 1/2W
R5007
33 1/2W
R5004
240K 1W
D5005
1SS244
D5009
ERB12-02
D5004
AG01
C5008
2.2/25
(OS)
R5009
100K
D5008
1SS244
C5014
0.018
C5011
0.0022
R5014
27K
C5010
220P
D5007
1SS244
R5011
1
D5006
GZB18C
R5015
0.47 1W
D5011
PC113A
0.05
0.01
5.7
4.7
R5107
100
R5108
10K
C5106
47/50
D5104
AG01
D5101
DLE30C
L5101
C5101
0.001/25
C5102
470/16
C5107
47/50
D5105
1SS244
D5106
1SS244
L5102 10μ
D5103
ERB81-004
C5104
0.0012/16
C5105
470/10
C5109
0.047
R5103
1.2K
R5106
2.05K
R5104
2.2K
C5110
0.027
R5105
1.6K
4.6
2.49
R5101
2.7
D5107
AG01
C5108
330/6.3
IC511
L5431
SHUNT REG
CN512
GND
DC 47V
DC 14V
ALWAYS 13V
ALWAYS 12V
PW-2
PR521
2A
Q5201
2SC536E
Q5202
2SD1666S
IC521
SI-3120CA
VOLTAGE REG.
14.0
14.0
13.0
12.0
REG.
D5203
DSK10C
D5202
DSK10C
Vin
Vr
Vo
GND
D5201
MTZJ2.0A
R5201
2.7K
R5202
2.7K
C5201
0.1
C5204
47/16
C5203
100/16
C5205
47/16
CN521
CN511
1 ALWAYS 45V
2 ALWAYS -30V
3 DC 2.7V
4 DC 2.7V
5 GND(MC)
6 ALWAYS 13V(MC)
7 GND(MH)
8 ALWAYS 13V(MH)
9 ALWAYS 5.8V
10 ALWAYS 12V
11 GND
12 GND
TO CP-1(PW-A)
CN541
VOLTAGE : STOP MODE

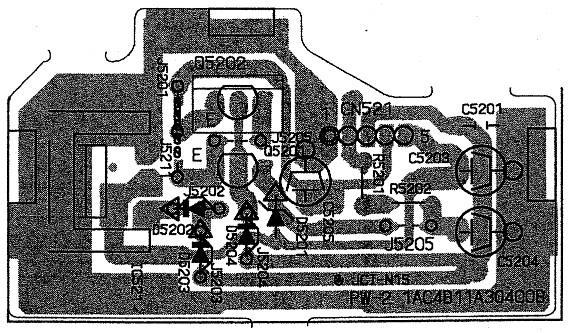
PW-3 P.C.B.


JCI-N1S
PW-3 1AC4B11A30500B
BR
BL
JW532
JW531
CN531

PW-1 P.C.B.

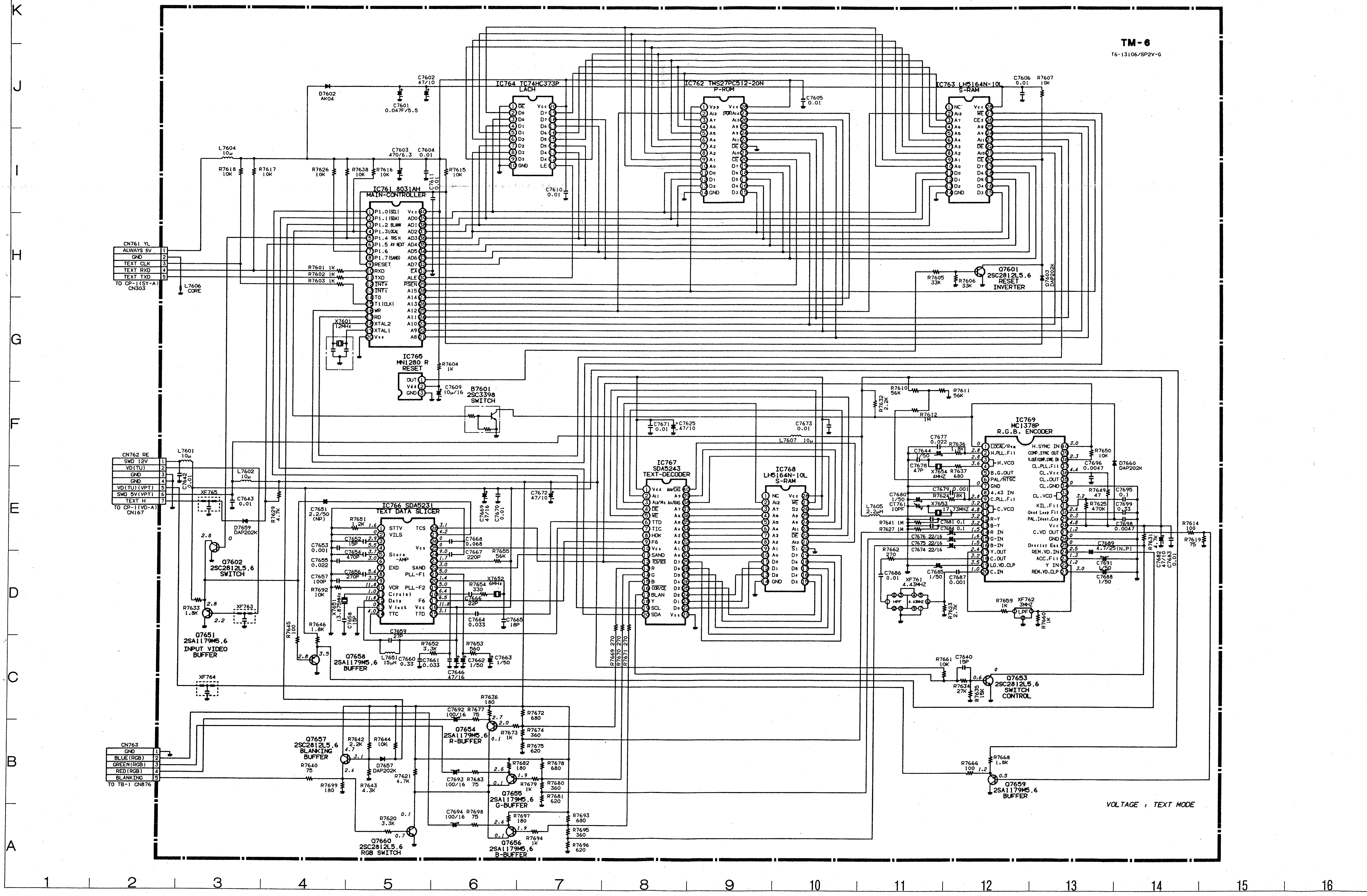

PW-1 1AC4B11A30300B
C5021
C5020
BR
JW502
L5002
J5005
J5004
C5002
R5001
C5001
T2A 250V
F5001
L5001
J5002
J5001
JCI-N1S
BL
JW501
D5001
C5003
C5007
R5002
R5016
D5009
R5004
D5010
D5003
C5005
R5005
R5003
C5004
C5008
T5001
D5011
CN511
CN512
L5101
C5101
C5108
D5107
D5102
C5109
D5103
R5104
C5110

PW-2 P.C.B.


D5202
CN521
C5201
R5201
R5202
C5203
C5204
C5205
J5205
D5201
D5203
JCI-N1S
PW-2 1AC4B11A30400B

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

TM-6 BOARD VIDEO TEXT DECODER (VPT) CIRCUIT DIAGRAM (FVH-P1440S ONLY)


TM-6
T6-13106/SP2V-G
IC764 TC74HC373P LACH
IC762 TMS27PC512-20N P-ROM
IC763 LH5164N-10L S-RAM
IC761 8031AH MAIN-CONTROLLER
IC765 MN1280 R RESET
IC766 SDA5231 TEXT DATA SLICER
IC767 SDA5243 TEXT-DECODER
IC768 LH5164N-10L S-RAM
IC769 MC1378P R.G.B. ENCODER
CN761 YL
ALWAYS 5V
GND
TEXT CLK
TEXT RXD
TEXT TXD
TO CP-1(SY-A) CN303
CN762 RE
SWD 12V
VD(TU)
GND
GND
VD(TU)(VPT)
SWD 5V(VPT)
TEXT H
TO CP-1(VD-A) CN167
CN763
GND
BLUE(RGB)
GREEN(RGB)
RED(RGB)
BLANKING
TO TB-1 CN876
D7602 AK04
C7602 47/10
C7601 0.047F/5.5
L7604 10μ
C7603 470/6.3
C7604 0.01
R7618 10K
R7617 10K
R7626 10K
R7638 10K
R7616 10K
R7615 10K
C7611 0.01
C7610 0.01
C7605 0.01
C7606 0.01
R7607 10K
R7601 1K
R7602 1K
R7603 1K
L7606 CORE
X7601 12MHz
R7604 1K
C7609 10μ/16
B7601 2SC3398 SWITCH
Q7601 2SC2812L5,6 RESET INVERTER
R7605 33K
R7606 33K
D7603 DAP202K
L7601 10μ
C7642 0.01
L7602 10μ
XF765
C7643 0.01
D7659 DAP202K
R7629 4.7K
Q7602 2SC2812L5,6 SWITCH
R7633 1.8K
XF763
Q7651 2SA1179M5,6 INPUT VIDEO BUFFER
XF764
C7651 2.2/50 (NP)
R7651 1.2K
C7652 15P
C7653 0.001
C7654 470P
C7655 0.022
C7656 270P
C7657 100P
R7692 10K
X7651 13.875MHz
C7658 18P
C7668 0.068
C7667 220P
R7655 56K
R7654 330
X7652 6MHz
C7666 22P
C7664 0.033
C7665 18P
C7659 27P
L7651 15μH
C7660 0.33
C7661 0.033
R7652 3.3K
R7653 560
C7662 1/50
C7663 1/50
C7646 47/16
C7669 47/16
C7670 0.01
C7672 47/10
R7645 100
R7646 1.8K
Q7658 2SA1179M5,6 BUFFER
C7671 0.01
C7625 47/10
C7673 0.01
L7607 10μ
R7669 270
R7670 270
R7671 270
R7610 56K
R7611 56K
R7632 2.2K
R7612 1M
C7677 0.022
R7636 1.8K
C7644 1/50
C7678 47P
X7654 4MHZ
R7637 680
C7679 0.001
R7624 18K
C7680 1/50
C7761 10PF
X7653 17.73MHZ
L7605 2.2μH
R7641 1M
R7627 1M
C7681 0.1
C7684 0.1
C7676 22/16
C7675 22/16
C7674 22/16
R7662 270
C7686 0.01
XF761 4.43MHZ
HPF
C7685 1/50
C7687 0.001
R7623 2.7K
R7659 1K
XF762 3MHZ
LPF
R7660 1K
R7650 10K
D7660 DAP202K
C7696 0.0047
R7649 47
C7695 0.1
R7625 470K
C7699 0.33
C7698 0.0047
C7689 4.7/25(N.P)
C7691 1/50
C7688 1/50
R7631 4.7K
C7682 47/10
C7683 0.01
R7614 100
R7619 75
R7661 10K
C7640 15P
R7634 27K
R7635 15K
Q7653 2SC2812L5,6 SWITCH CONTROL
R7666 100
R7668 1.8K
Q7659 2SA1179M5,6 BUFFER
VOLTAGE : TEXT MODE
R7676 180
C7692 100/16
R7677 75
R7672 680
R7673 1K
R7674 360
R7675 620
Q7654 2SA1179M5,6 R-BUFFER
Q7657 2SC2812L5,6 BLANKING BUFFER
R7642 2.2K
R7644 10K
R7640 75
D7657 DAP202K
R7621 4.7K
R7699 180
R7643 4.3K
C7693 100/16
R7683 75
R7682 180
R7678 680
R7679 1K
R7680 360
R7681 620
Q7655 2SA1179M5,6 G-BUFFER
R7620 3.3K
Q7660 2SC2812L5,6 RGB SWITCH
C7694 100/16
R7698 75
R7697 180
R7693 680
R7694 1K
R7695 360
R7696 620
Q7656 2SA1179M5,6 B-BUFFER
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
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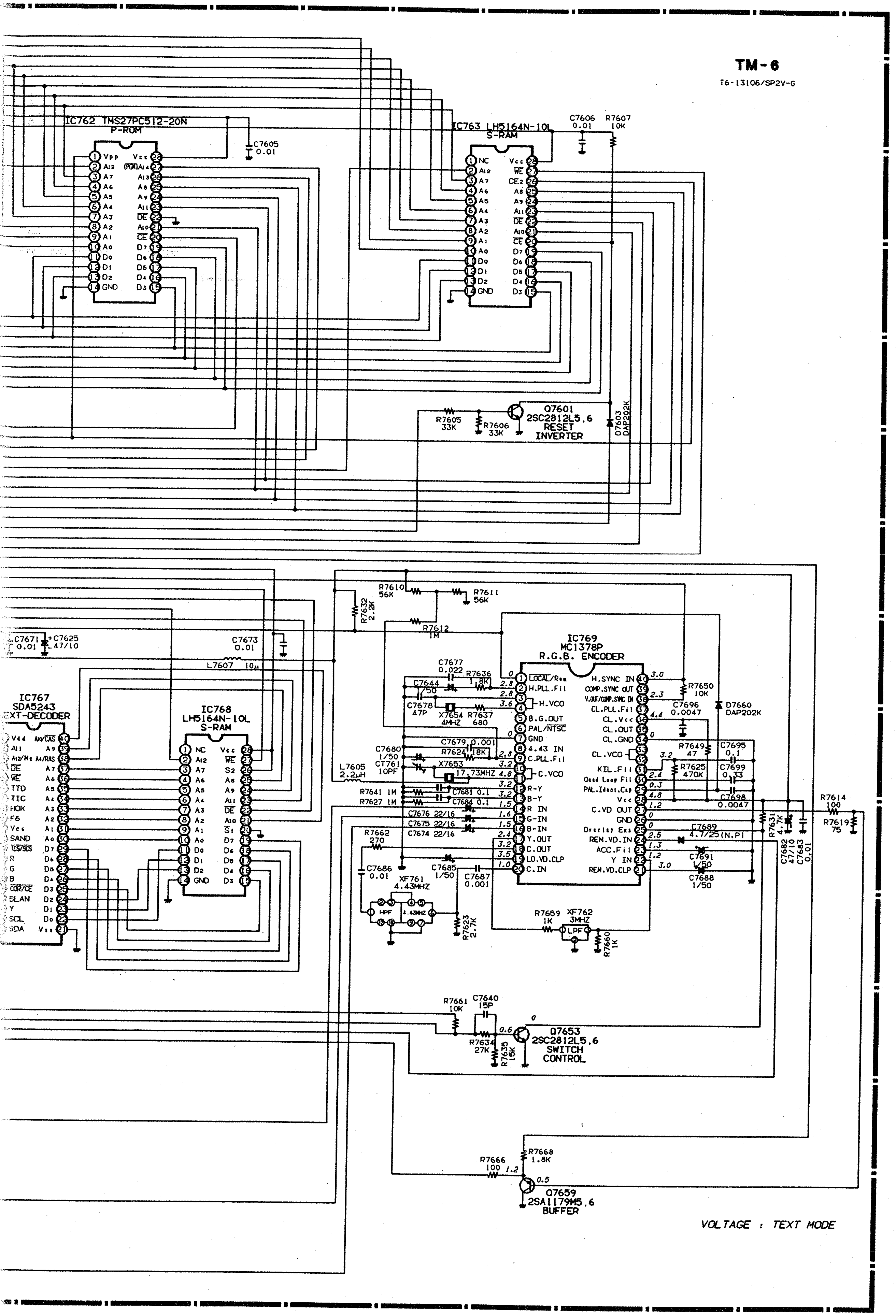
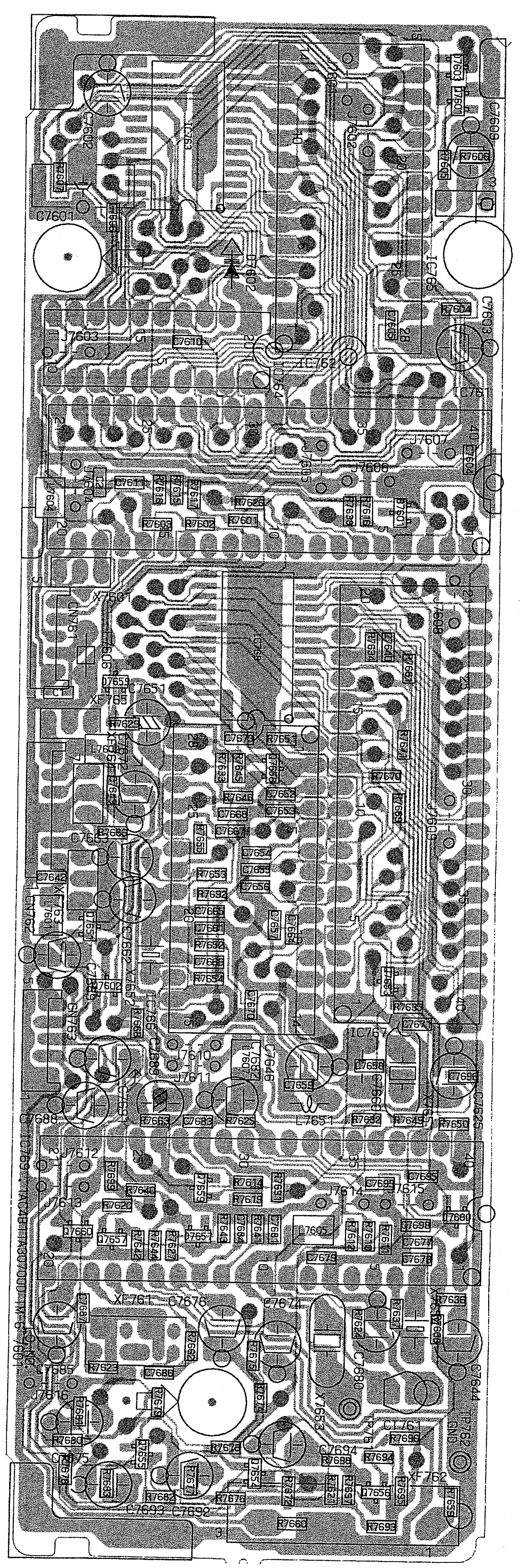
14
15
16

NOTE:

ER (VPT) CIRCUIT DIAGRAM (FVH-P1440S ONLY)


TM-6
T6-13106/SP2V-G
IC762 TMS27PC512-20N
P-ROM
IC763 LH5164N-10L
S-RAM
C7605 0.01
C7606 0.01
R7607 10K
Q7601
2SC2812L5,6
RESET
INVERTER
R7605 33K
R7606 33K
D7603 DAP202K
IC769
MC1378P
R.G.B. ENCODER
IC767
SDA5243
TEXT-DECODER
IC768
LH5164N-10L
S-RAM
R7610 56K
R7611 56K
R7612 1M
R7632 2.2K
C7671 0.01
C7625 47/10
C7673 0.01
L7607 10μ
L7605 2.2μH
C7677 0.022
R7636 1.8K
C7644 1/50
C7678 47P
X7654 4MHZ
R7637 680
C7679 0.001
R7624 18K
C7680 1/50
CT761 10PF
X7653 17.73MHZ
R7641 1M
R7627 1M
C7681 0.1
C7684 0.1
C7676 22/16
C7675 22/16
C7674 22/16
R7662 270
C7686 0.01
XF761 4.43MHZ
C7685 1/50
C7687 0.001
R7623 2.7K
R7650 10K
D7660 DAP202K
C7696 0.0047
R7649 47
C7695 0.1
R7625 470K
C7699 0.33
C7698 0.0047
C7689 4.7/25(N.P)
C7691 1/50
C7688 1/50
R7631 4.7K
C7682 47/16
C7683 0.01
R7614 100
R7619 75
R7659 1K
XF762 3MHZ
R7660 1K
R7661 10K
C7640 15P
Q7653
2SC2812L5,6
SWITCH
CONTROL
R7634 27K
R7635 10K
R7668 1.8K
R7666 100
Q7659
2SA1179M5,6
BUFFER
VOLTAGE : TEXT MODE

TM-6 P.C.B.



NOTE: ▩ BOTTOM SIDE FOIL
▨ TOP SIDE FOIL

9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

IC301 SYSTEM CONTROL/TIMER/TUNING CONTROL MPU PIN FUNCTIONS TABLE
(FVH-P1400S)

No.	Name	I/O	I/O Signal Function
1	T.END S.	I	Sensor signal input for tape end detection.
2	AV REF	I	Reference voltage input for internal A/D converter.
3	A-VDD	-	Power supply terminal for internal A/D converter.
4	VDD	-	IC power supply terminal.(5Vdc)
5	VDD	-	IC power supply terminal.(5Vdc)
6	X2	-	IC clock OSC terminal. Frequency is 6MHz.
7	X1	-	
8	IC	-	IC ground terminal.
9	XT2	-	Clock OSC for when power failure condition. Frequency is 32.672kHz.
10	XT1	-	
11	VSS	-	Ground terminal
12	BG / L	O	TV system (PAL BG or SECAM L) selection signal.
13	VD MUTE	O	"H" output during TU video mute.
14	AD MUTE	O	"H" output during TU audio mute.
15	MC-BR	O	Brake signal for capstan motor.
16	ML-F	O	Loading motor rotation direction (FWD) indication signal.
17	ML-R	O	Loading motor rotation direction (REV) indication signal.
18	ML-L	O	Loading motor rotation speed (low speed) indication signal.
19	ML-M	O	Loading motor rotation speed (medium speed) indication signal.
20	SEG p	O	Display segment outputs (FLD). (Included key-scan output)
21	SEG o	O	
22	SEG n	O	
23	SEG m	O	
24	SEG l	O	
25	SEG k	O	
26	SEG j	O	
27	SEG i	O	
28	SEG h	O	
29	SEG g	O	
30	VDD	-	IC power supply input.(5Vdc)
31	V LOAD	O	-23V input for FLD drive.
32	SEG f	O	Display segment outputs (FLD). (Incloded key-scan output)
33	SEG e	O	
34	SEG d	O	
35	SEG c	O	
36	SEG b	O	
37	SEG a	O	
38	-	-	
39	G9	O	Display grid outputs (FLD).
40	G8	O	
41	G7	O	
42	G6	O	
43	G5	O	
44	G4	O	
45	G3	O	
46	G2	O	
47	G1	O	
48	VDD	-	IC power supply input.(5Vdc)
49	0/1 DATA	I	CTL pulse duty detection signal input. Used for VISS detection.
50	SV S DATA	O	Output 8-bit X 4 serial data giving operation mode and tracking data,etc., to digital servo IC. CLK is its clock pulse.
51	SV S CLK	O	
52	PLL CS	O	Chip enable (access) signal output to PLL tuning system IC.
53	KEY IN 3	I	Operation key data inputs.
54	KEY IN 2	I	
55	KEY IN 1	I	
56	KEY IN 0	I	
57	I2C SDA	I/O	Data exchange with the VPS decoder IC.
58	FF+REW	O	Signal indicating FF or REW mode.
59	-	-	
60	-	-	
61	E2PROM CS	O	E2PROM access (enable) signal output.
62	CH+	O	CH+ control signal output.
63	BLUE BACK ON	O	Blue back ON/OFF indicating signal output to OSD IC.
64	OSA CS	O	Chip enable (access) signsl output to OSD IC.
65	VSS	-	IC ground terminal.
66	T.REEL P.	I	Pulse input for detection of take-up reel table rotation.
67	SW DATA 2	I	3-bit data indicating operation position of mechanism.
68	SW DATA 1	I	
69	SW DATA 0	I	
70	PB H	O	Signal indicating playback mode.
71	AD MUTE	O	Signal disable audio signal output.
72	REC H	O	Signal indicating recording mode.
73	DOC OFF	O	Drop out pulse width selection signal output to DOC detection circuit.
74	INPUT SEL.	O	Signal for selecting video/audio input signal.
75	AV CTL	O	AV terminal (pin8 of 21pin AV socket) control signal output.
76	POWER UP	O	"HIGH" output except when power is off. Indicating that power is ON.
77	4k-PWM	O	Output 4kHz PWM signal for set period at start of high-speed FF/REW.
78	H.SYNC	I	Sync. detection signal input for existing channel discrimination.
79	C-FG P.	I	FG signal input of capstan motor.
80	CTL P.	I	CTL head recording/playback pulse signal input.
81	REMOCON	I	Remote control signal input.
82	FL-START SW	I	Switch input indicating start of cassette loading or discharge by cassette mechanism.
83	COMMON DATA	I/O	Terminal for communication of respective data with E2PROM IC, OSD IC and tuning PLL IC. The clock pulse is output from this microprocessor.
84	COMMON CLK	O	
85	RF SW P.	I	Input of RF switching pulse created by head drum PG.
86	RESET	-	Initial reset terminal for this IC.
87	A-VSS	-	Ground terminal for internal A/D converter.
88	POWER DOWN	I	Power failure detection terminal.
89	TAPE SPEED	I	Input of result of tape speed discrimination by digital servo IC.
90	ENV.	I	Video head envelope detection signal input for ATR function.
91	SAFETY SW	I	Input terminal for accidental erasur prevention switch. No operation to recording mode while "LOW" is input.
92	AFT-C	I	Tuner AFT s-curve signal input for tuner AFT function.
93	DEW S.	I	Dew sensor input terminal.
94	T.TOP S.	I	Sensor signal input for tape beginning detection.

SP4EF-OS

IC301 SYSTEM CONTROL/TIMER/TUNING CONTROL MPU PIN FUNCTIONS TABLE
(FVH-P1440S)

No.	Name	I/O	I/O Signal Function
1	T.END S.	I	Sensor signal input for tape end detection.
2	AV REF	I	Reference voltage input for internal A/D converter.
3	A-VDD	-	Power supply terminal for internal A/D converter.
4	VDD	-	IC power supply terminal.(5Vdc)
5	VDD	-	IC power supply terminal.(5Vdc)
6	X2	-	IC clock OSC terminal. Frequency is 6MHz.
7	X1	-	
8	IC	-	IC ground terminal.
9	XT2	-	Clock OSC for when power failure condition. Frequency is 32.672kHz.
10	XT1	-	
11	VSS	-	Ground terminal
12	BG / L	O	TV system (PAL BG or SECAM L) selection signal.
13	VD MUTE	O	"H" output during TU video mute.
14	AD MUTE	O	"H" output during TU audio mute.
15	MC-BR	O	Brake signal for capstan motor.
16	ML-F	O	Loading motor rotation direction (FWD) indication signal.
17	ML-R	O	Loading motor rotation direction (REV) indication signal.
18	ML-L	O	Loading motor rotation speed (low speed) indication signal.
19	ML-M	O	Loading motor rotation speed (medium speed) indication signal.
20	SEG p	O	Display segment outputs (FLD). (Included key-scan output)
21	SEG o	O	
22	SEG n	O	
23	SEG m	O	
24	SEG l	O	
25	SEG k	O	
26	SEG j	O	
27	SEG i	O	
28	SEG h	O	
29	SEG g	O	
30	VDD	-	IC power supply input.(5Vdc)
31	V LOAD	O	-23V input for FLD drive.
32	SEG f	O	Display segment outputs (FLD). (Incloded key-scan output)
33	SEG e	O	
34	SEG d	O	
35	SEG c	O	
36	SEG b	O	
37	SEG a	O	
38	-	-	
39	G9	O	Display grid outputs (FLD).
40	G8	O	
41	G7	O	
42	G6	O	
43	G5	O	
44	G4	O	
45	G3	O	
46	G2	O	
47	G1	O	
48	VDD	-	IC power supply input.(5Vdc)
49	0/1 DATA	I	CTL pulse duty detection signal input. Used for VISS detection.
50	SV S DATA	O	Output 8-bit X 4 serial data giving operation mode and tracking data,etc., to digital servo IC. CLK is its clock pulse.
51	SV S CLK	O	
52	PLL CS	O	Chip enable (access) signal output to PLL tuning system IC.
53	KEY IN 3	I	Operation key data inputs.
54	KEY IN 2	I	
55	KEY IN 1	I	
56	KEY IN 0	I	
57	I2C SDA	I/O	Data exchange with the VPS decoder IC.
58	FF+REW	O	Signal indicating FF or REW mode.
59	-	-	
60	VPT DATA IN	I	Data input terminal for VIDEOTEXT decoder IC.
61	E2PROM CS	O	E2PROM access (enable) signal output.
62	CH+	O	CH+ control signal output.
63	VPT DATA OUT	O	Data output terminal for VIDEOTEXT decoder IC.
64	VPT CLK	O	Clock signal output to VIDEOTEXT decoder IC.
65	VSS	-	IC ground terminal.
66	T.REEL P.	I	Pulse input for detection of take-up reel table rotation.
67	SW DATA 2	I	3-bit data indicating operation position of mechanism.
68	SW DATA 1	I	
69	SW DATA 0	I	
70	PB H	O	Signal indicating playback mode.
71	AD MUTE	O	Signal disable audio signal output.
72	REC H	O	Signal indicating recording mode.
73	DOC OFF	O	Drop out pulse width selection signal output to DOC detection circuit.
74	INPUT SEL.	O	Signal for selecting video/audio input signal.
75	AV CTL	O	AV terminal (pin8 of 21pin AV socket) control signal output.
76	POWER UP	O	"HIGH" output except when power is off. Indicating that power is ON.
77	4k-PWM	O	Output 4kHz PWM signal for set period at start of high-speed FF/REW.
78	H.SYNC	I	Sync. detection signal input for existing channel discrimination.
79	C-FG P.	I	FG signal input of capstan motor.
80	CTL P.	I	CTL head recording/playback pulse signal input.
81	REMOCON	I	Remote control signal input.
82	FL-START SW	I	Switch input indicating start of cassette loading or discharge by cassette mechanism.
83	COMMON DATA	I/O	Terminal for communication of respective data with E2PROM IC, OSD IC and tuning PLL IC. The clock pulse is output from this microprocessor.
84	COMMON CLK	O	
85	RF SW P.	I	Input of RF switching pulse created by head drum PG.
86	RESET	-	Initial reset terminal for this IC.
87	A-VSS	-	Ground terminal for internal A/D converter.
88	POWER DOWN	I	Power failure detection terminal.
89	TAPE SPEED	I	Input of result of tape speed discrimination by digital servo IC.
90	ENV.	I	Video head envelope detection signal input for ATR function.
91	SAFETY SW	I	Input terminal for accidental erasur prevention switch. No operation to recording mode while "LOW" is input.
92	AFT-C	I	Tuner AFT s-curve signal input for tuner AFT function.
93	DEW S.	I	Dew sensor input terminal.
94	T.TOP S.	I	Sensor signal input for tape beginning detection.

SP4EF-VT

IC301 SYSTEM CONTROL/TIMER/TUNING CONTROL MPU PIN FUNCTIONS TABLE (FVH-P1400DK)

No.	Name	I/O	I/O Signal Function
1	T.END S.	I	Sensor signal input for tape end detection.
2	AV REF	I	Reference voltage input for internal A/D converter.
3	A-VDD	-	Power supply terminal for internal A/D converter.
4	VDD	-	IC power supply terminal.(5Vdc)
5	VDD	-	IC power supply terminal.(5Vdc)
6	X2	-	IC clock OSC terminal. Frequency is 6MHz.
7	X1	-	
8	IC	-	IC ground terminal.
9	XT2	-	Clock OSC for when power failure condition. Frequency is 32.672kHz.
10	XT1	-	
11	VSS	-	Ground terminal
12	AFT MUTE	O	"H" output during TU AFT mute.
13	VD MUTE	O	"H" output during TU video mute.
14	AD MUTE	O	"H" output during TU audio mute.
15	MC-BR	O	Brake signal for capstan motor.
16	ML-F	O	Loading motor rotation direction (FWD) indication signal.
17	ML-R	O	Loading motor rotation direction (REV) indication signal.
18	ML-L	O	Loading motor rotation speed (low speed) indication signal.
19	ML-M	O	Loading motor rotation speed (medium speed) indication signal.
20	SEG p	O	Display segment outputs (FLD). (Included key-scan output)
21	SEG o	O	
22	SEG n	O	
23	SEG m	O	
24	SEG l	O	
25	SEG k	O	
26	SEG j	O	
27	SEG i	O	
28	SEG h	O	
29	SEG g	O	
30	VDD	-	IC power supply input.(5Vdc)
31	V LOAD	O	-23V input for FLD drive.
32	SEG f	O	Display segment outputs (FLD). (Inclоded key-scan output)
33	SEG e	O	
34	SEG d	O	
35	SEG c	O	
36	SEG b	O	
37	SEG a	O	
38	-	-	
39	G9	O	Display grid outputs (FLD).
40	G8	O	
41	G7	O	
42	G6	O	
43	G5	O	
44	G4	O	
45	G3	O	
46	G2	O	
47	G1	O	
48	VDD	-	IC power supply input.(5Vdc)
49	0/1 DATA	I	CTL pulse duty detection signal input. Used for VISS detection.
50	SV S DATA	O	Output 8-bit X 4 serial data giving operation mode and tracking data,etc., to digital servo IC.
51	SV S CLK	O	CLK is its clock pulse.
52	PWM	O	Tuning voltage output (PWM signal).

No.	Name	I/O	I/O Signal Function
53	KEY IN 3	I	Operation key data inputs.
54	KEY IN 2	I	
55	KEY IN 1	I	
56	KEY IN 0	I	
57	I2C SDA	I/O	Data exchange with the VPS decoder IC.
58	FF+REW	O	Signal indicating FF or REW mode.
59	BAND1	O	Tuning band data output(BAND1,BAND2).
60	BAND2	O	(L,L)=VHF-LOW (L,H)=VHF-HIGH (H,L)=UHF (H,H)=SKIP
61	E2PROM CS	O	E2PROM access (enable) signal output.
62	CH+	O	CH+ control signal output.
63	BLUE BACK ON	O	Blue back ON/OFF indicating signal output to OSD IC.
64	OSA CS	O	Chip enable (access) signsl output to OSD IC.
65	VSS	-	IC ground terminal.
66	T.REEL P.	I	Pulse input for detection of take-up reel table rotation.
67	SW DATA 2	I	3-bit data indicating operation position of mechanism.
68	SW DATA 1	I	
69	SW DATA 0	I	
70	PB H	O	Signal indicating playback mode.
71	AD MUTE	O	Signal disable audio signal output.
72	REC H	O	Signal indicating recording mode.
73	DOC OFF	O	Drop out pulse width selection signal output to DOC detection circuit.
74	INPUT SEL.	O	Signal for selecting video/audio input signal.
75	AV CTL	O	AV terminal (pin8 of 21pin AV socket) control signal output.
76	POWER UP	O	"HIGH" output except when power is off. Indicating that power is ON.
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78	H.SYNC	I	Sync. detection signal input for existing channel discrimination.
79	C-FG P.	I	FG signal input of capstan motor.
80	CTL P.	I	CTL head recording/playback pulse signal input.
81	REMOCON	I	Remote control signal input.
82	FL-START SW	I	Switch input indicating start of cassette loading or discharge by cassette mechanism.
83	COMMON DATA	I/O	Terminal for communication of respective data with E2PROM IC, OSD IC and tuning PLL IC.
84	COMMON CLK	O	The clock pulse is output from this microprocessor.
85	RF SW P.	I	Input of RF switching pulse created by head drum PG.
86	RESET	-	Initial reset terminal for this IC.
87	A-VSS	-	Ground terminal for internal A/D converter.
88	POWER DOWN	I	Power failure detection terminal.
89	TAPE SPEED	I	Input of result of tape speed discrimination by digital servo IC.
90	ENV.	I	Video head envelope detection signal input for ATR function.
91	SAFETY SW	I	Input terminal for accidental erasur prevention switch. No operation to recording mode while "LOW" is input.
92	AFT-C	I	Tuner AFT s-curve signal input for tuner AFT function.
93	DEW S.	I	Dew sensor input terminal.
94	T.TOP S.	I	Sensor signal input for tape beginning detection.

SP4EV-OS

MECHANISM SERVICE TECHNICAL INFORMATION

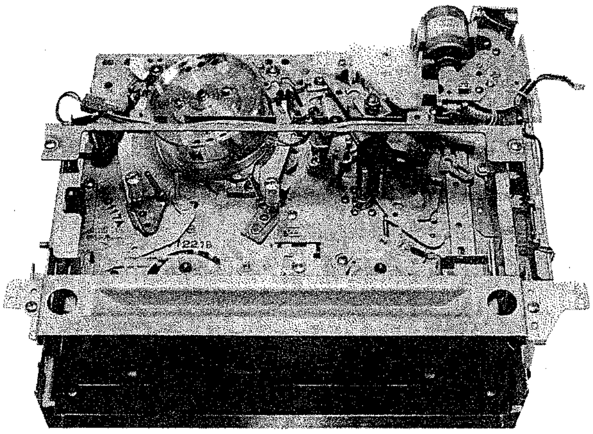
V05955

VIDEO
CASSETTE RECORDER

FISHER

P90 MECHANISM

VHS HQ
PAL SECAM



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1. OUTLINE OF MECHANISM

This mechanism is named P-90 Mechanism. Its features include :

(1) The chassis is fabricated by drawing a 1.6mm thick electric zinc plated steel sheet, and mechanical parts are ingeniously laid on this chassis. The mechanism is as thick as 70.3 mm.

(2) After insertion of a cassette, the tape is normally wound to the head drum based on the full loading system. This design results in the shortening of the mode shift time, that is, the time from the depression of the PLAY pushbutton switch to the video image display on screen has been significantly quickened.

(3) The full loading system employed has the F/R search capability (when the same button (F.FWD or REW) is pressed in the F.FWD or REW modes, the search mode playback image appears on the screen).

(4) Also, a thin type head drum without lead is provided to increase the operating convenience of the equipment to a considerable extent.

(5) The drive source for cassette loading and the motor for the tape loading mode selection are used in combination with the head motor and the capstan motor for realization of a 3-motor system.

1-1. FULL LOADING MECHANISM

(1) Description of full loading mechanism
As shown in Fig. 1-1 a tape has hitherto been wound onto the head drum only in the PLAY and F/R SEARCH mode, but in this radically new mechanism, in every mode can be made with the tape kept wound onto the head drum.

(2) Features of full loading mechanism
With the provision of the full loading mechanism, the operating convenience, which was hitherto a drawback of the VHS system, has been improved. A host of other salient features are also designed into this mechanism as apparent from the following description.

I. Quick playback
Mode shift time such as the STOP→PLAY and FF/REW→PLAY has been shortened for quicker playback.

II. High-speed VISS
The time from the detection of VISS search signal based on the VHS standardized search system till image display on the screen has considerably been shortened to make high-speed VISS possible.

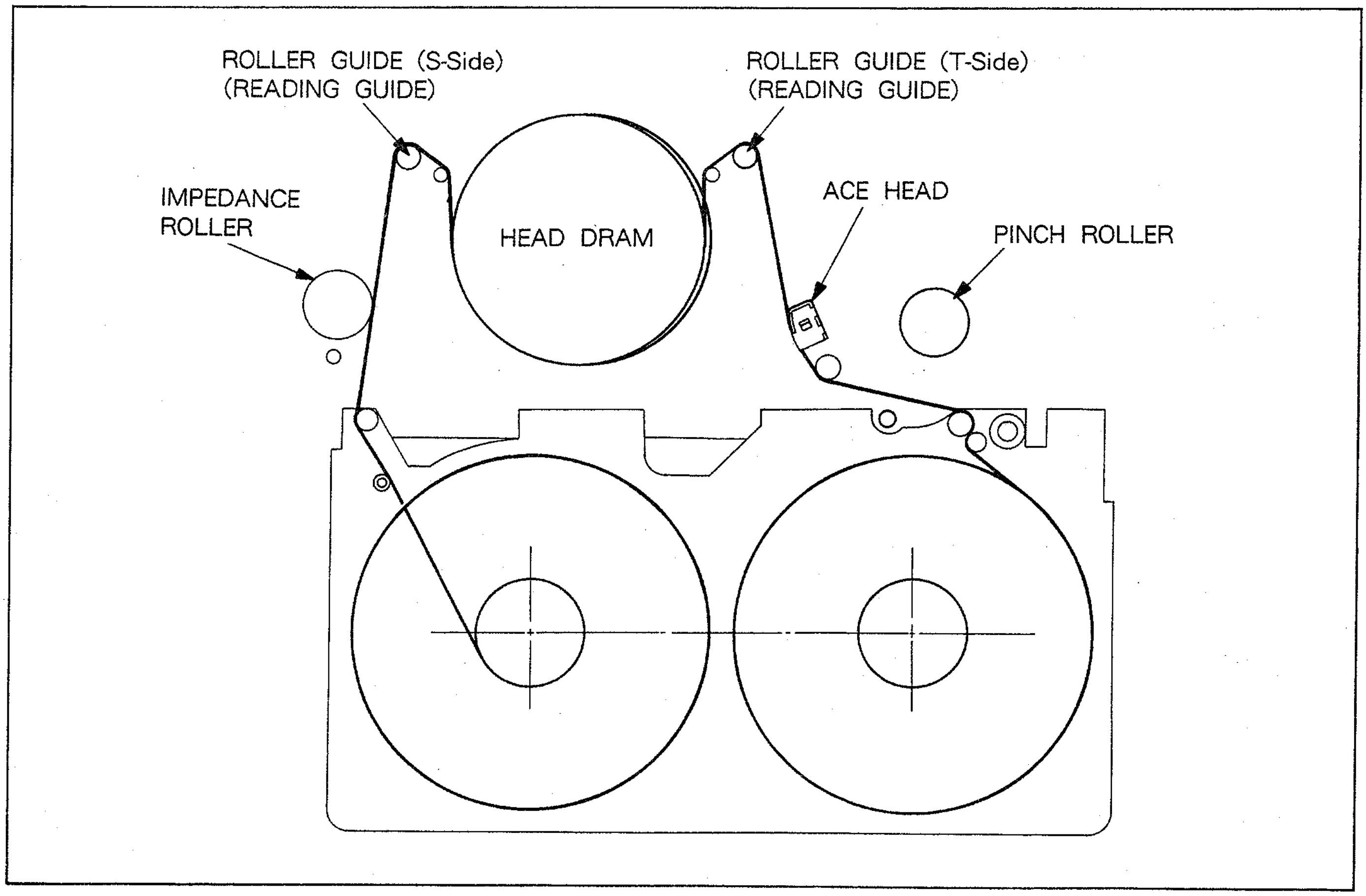


Fig. 1-1 FULL LOADING SYSTEM (AT FF/REW MODE)

III. F/R search
FF↔F-SEARCH and REW↔R-SEARCH can be made direct by reducing the mode transition time.

(3) Protection mechanism for full loading system

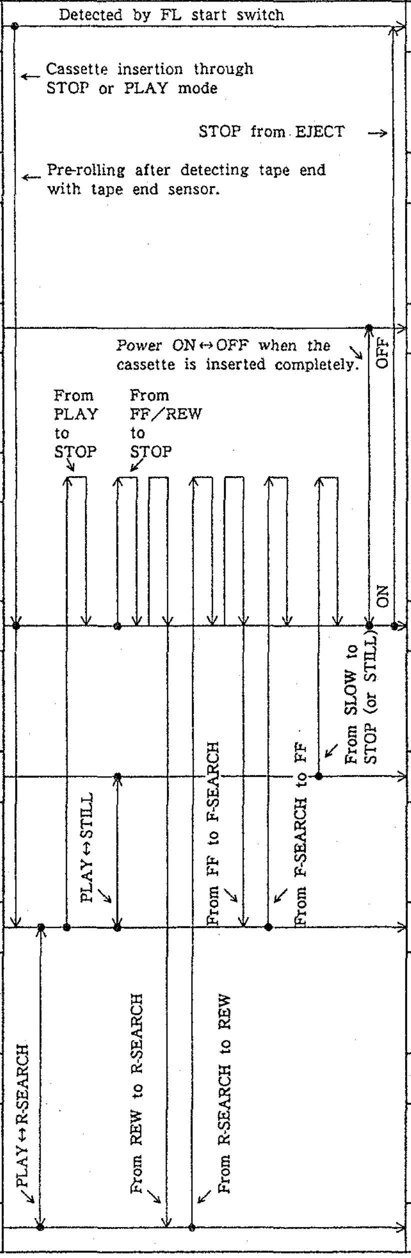
I. Video Tape Protection Mechanism
   (a) FF/REW→STOP
   Tape tension applied to the head drum when stopping is lowered by optimizing the balance between the left and right, and brake forces acting on the left and right reel table. Thereby it prevents from causing a scratch on the tape due to V-head when stopping.
   (b) STOP→FF/REW
   The starting-up speed of the capstan motor is ingeniously designed to preclude the possibility of unusual tape tension at the time of REW/FWD start-up.
   (c) Tape end brake damping
   The design of the mechanism is so made that the time from issuance of an electrical STOP command till actual brake application is reduced to a minimum. This enable the braking to be completed before the reader tape end.
   (d) FF/REW running
   To ensure highly stable tape running in any condition and any environment, design consideration is given to the foundation brake torque (soft brake) to the reel table and the tape winding angle with respect to each tape guide. Particularly in regard to the supply side fixing guide and F.T.E (Full Track Erase) head, the design is so made that they do not come into contact with the tape at the time of FF/REW operation to alleviate load application.

II. Final End Position Tape Loading Protection Mechanism
Tape pull-out (loading) from within the cassette is done to ensure proper take-up of the tape onto the head drum. At that time, the tape is extended from the supply reel side.
So, if the tape is wound to the final end, no loading can be made. For this reason, a mode is designed to allow the tape to be rewound a little at the final end of the tape without any loading done.

2. DESCRIPTION OF MECHANISM OPERATION

2-1. BASIC OPERATION MODE OF MECHANISM

The P-90 mechanism has its original modes such as given in Table 2-1, in addition to the VTR is operation modes (STOP, FF, REW, PLAY, REC, R-SEARCH, F-SEARCH, STILL, SLOW, and ETS). These modes specific to the mechanism play important roles in tape protection operation at the time of a shift to various modes of the VTR above. A shift to the mode specific to the mechanism is carried out by controlling the rotation of the loading motor with the control signal of the system control circuit. The detection of important mechanism operation mode positions is done by using the FL START SWITCH for detecting the cassette ejection/insertion, and the MECHANISM MODE SWITCH for detecting each mode of the mechanism (3 bit MODE DATA is output by operating the rotary switch).

Mechanism Mode	Mechanism Mode Switch			HEX DATA	Function	Main Mode Shifting Conditions	VTR Operation Mode
	3	2	1				
EJECT	–	–	–		Eject position		EJECT
					↑ Front loading/Unloading ↓		
SHORT REW	–	–	–		Take up operation in the tape end position		Low side of ⑥. Sensed upon IN
INITIAL	1	1	1	⑦	Power off position		Power off when tape is loaded completely
					Tape unloading position ↑ Tape loading ↓ Tape loading ending position		
BRAKE	0	0	1	①	Main brake applying position		
STOP / FF/REW	0	1	0	②	STOP waiting and FF/REW (the head motor rotation)		STOP, FF/REW
STILL	0	1	1	③	The positions of STILL, SLOW or F-ADV.		STILL, SLOW, F-ADV
PLAY	1	0	0	④	From FWD direction Normal running mode		PLAY, REC, F-SEARCH
IDLER	1	0	1	⑤	Forward/reverse changeover position		PAUSE
REV	1	1	0	⑥	From REV direction Normal running mode		R-SEARCH

Detected by FL start switch
Cassette insertion through STOP or PLAY mode
STOP from EJECT
Pre-rolling after detecting tape end with tape end sensor.
Power ON↔OFF when the cassette is inserted completely.
OFF
From PLAY to STOP
From FF/REW to STOP
ON
From SLOW to STOP (or STILL)
From F-SEARCH to FF
From FF to F-SEARCH
PLAY↔STILL
From F-SEARCH to FF
PLAY↔R-SEARCH
From REW to R-SEARCH
From R-SEARCH to REW

Table 2-1

2-2. DESCRIPTION OF MECHANISM DRIVE

To realize the thin type mechanism, a loading motor and two pieces of cam (MAIN CAM GEAR and the MODE CAM GEAR) to be driven by the said motor are mounted on the upper part of the capstan motor, that was a dead space in the conventional mechanisms hitherto available with a view to optimization of parts mounting layout. (Fig. 2-1 and Fig. 2-2.)

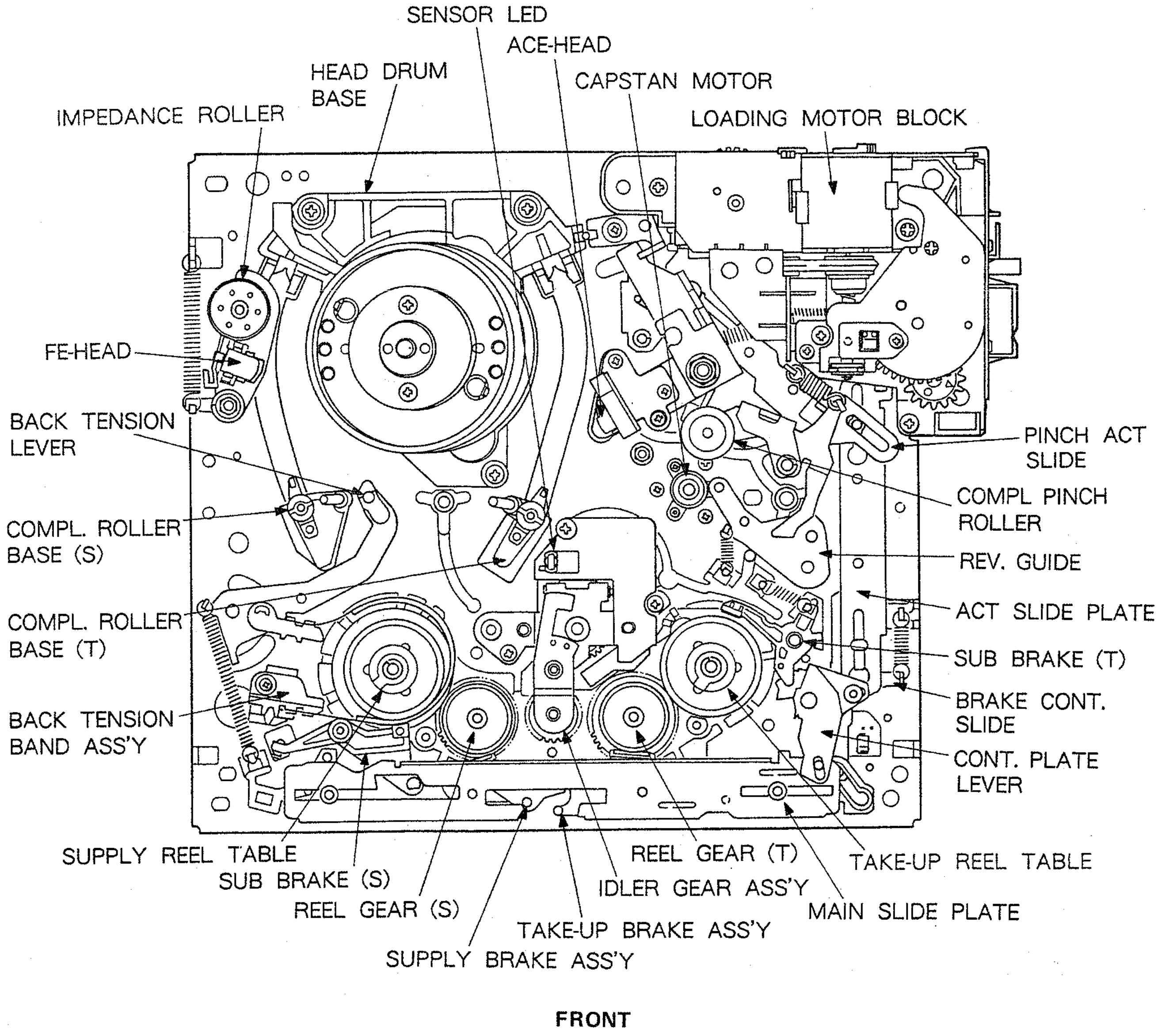

SENSOR LED
ACE-HEAD
HEAD DRUM BASE
CAPSTAN MOTOR
IMPEDANCE ROLLER
LOADING MOTOR BLOCK
FE-HEAD
BACK TENSION LEVER
PINCH ACT SLIDE
COMPL PINCH ROLLER
COMPL. ROLLER BASE (S)
REV. GUIDE
COMPL. ROLLER BASE (T)
ACT SLIDE PLATE
SUB BRAKE (T)
BACK TENSION BAND ASS'Y
BRAKE CONT. SLIDE
CONT. PLATE LEVER
SUPPLY REEL TABLE
REEL GEAR (T)
TAKE-UP REEL TABLE
SUB BRAKE (S)
IDLER GEAR ASS'Y
REEL GEAR (S)
MAIN SLIDE PLATE
TAKE-UP BRAKE ASS'Y
SUPPLY BRAKE ASS'Y
FRONT

Fig. 2-1 TOP VIEW OF MECHANISM (INITIAL MODE)

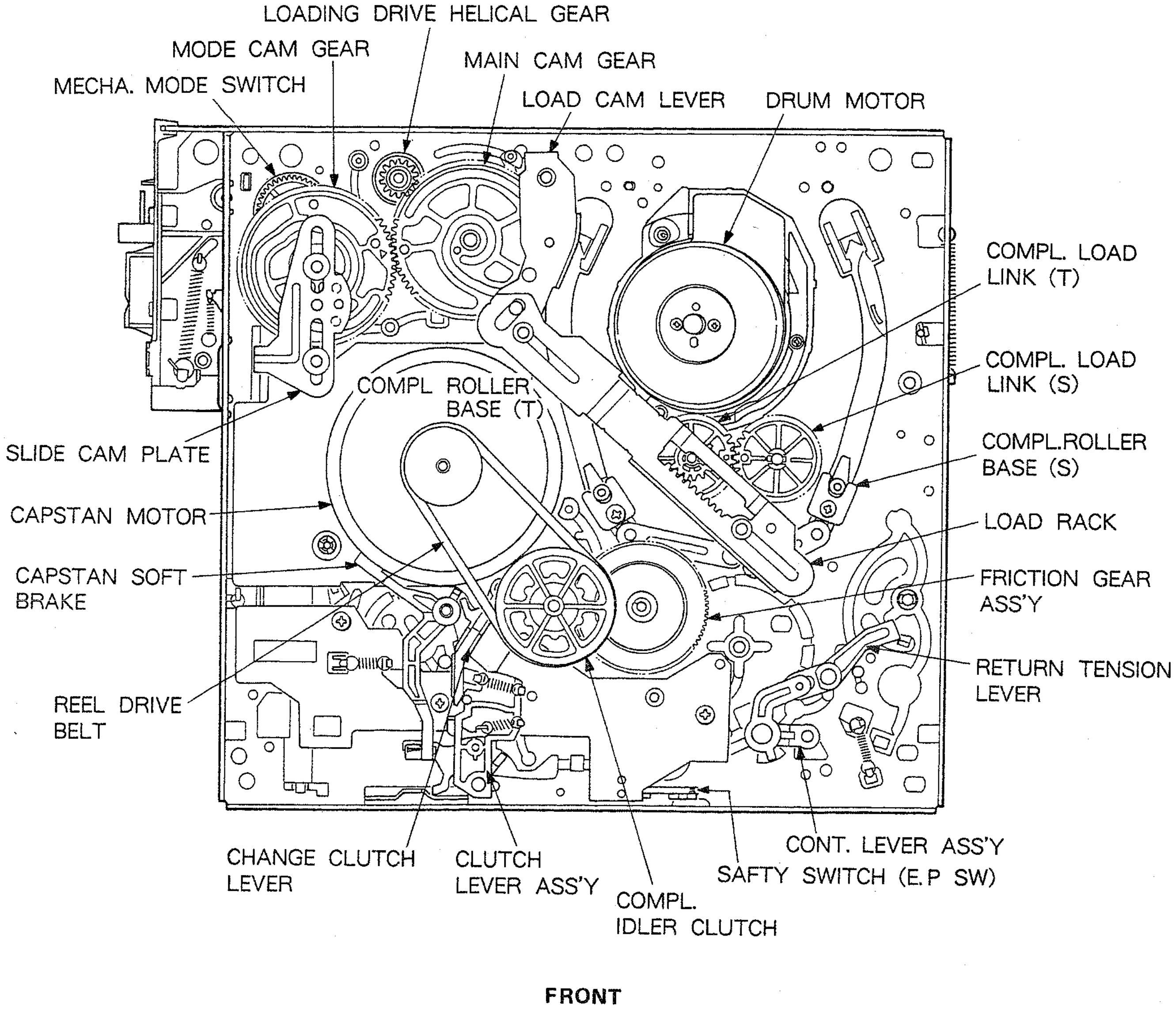

LOADING DRIVE HELICAL GEAR
MODE CAM GEAR
MAIN CAM GEAR
MECHA. MODE SWITCH
LOAD CAM LEVER
DRUM MOTOR
COMPL. LOAD LINK (T)
COMPL. LOAD LINK (S)
COMPL ROLLER BASE (T)
COMPL.ROLLER BASE (S)
SLIDE CAM PLATE
CAPSTAN MOTOR
LOAD RACK
CAPSTAN SOFT BRAKE
FRICTION GEAR ASS'Y
RETURN TENSION LEVER
REEL DRIVE BELT
CONT. LEVER ASS'Y
CHANGE CLUTCH LEVER
CLUTCH LEVER ASS'Y
SAFTY SWITCH (E.P SW)
COMPL. IDLER CLUTCH
FRONT

Fig. 2-2 BOTTOM VIEW OF MECHANISM (INITIAL MODE)

These two cams have one CAM GROOVE on both sides. A total of four CAM GROOVEs performs independent functions to meet the multi-function needs of these days by driving the elements of a wide variety of functions with the motor precisely controlled by a microcomputer.

The two cams are positive motion cams having a groove over 570 degrees. These cams cause the amount of lift to be changed by a mild gradient according to the angle of rotation while synchronizedly being rotated by an outer circumferential gear to alleviate the load exerted on the cams when driving the rod linked with the cams and also to ensure position stability in each mode of operation. The geometry of each cam and that of a metal fitting of the drive section are shown in Fig. 2-3 and Fig. 2-4, respectively. Also, the role of each cam used is described below.

On the GROOVE 3 side of MODE CAM GEAR have a small gear. This small gear is engaged with the MECHANISM MODE SWITCH as shown in Fig. 2-3., and detect the mechanism operation mode. In this way, the two cams and the MECHANISM MODE SWITCH are rotated synchronously, and the mechanism is fully synchronized and driven for each mode.

MAIN CAM GEAR : CAM GROOVE 1.
Pinch roller pressing operation
CAM GROOVE 2.
Tape loading mechanical drive
MODE CAM GEAR : CAM GROOVE 3.
Brake and clutch selecting operation
CAM GROOVE 4.
Brake control and front unloading control

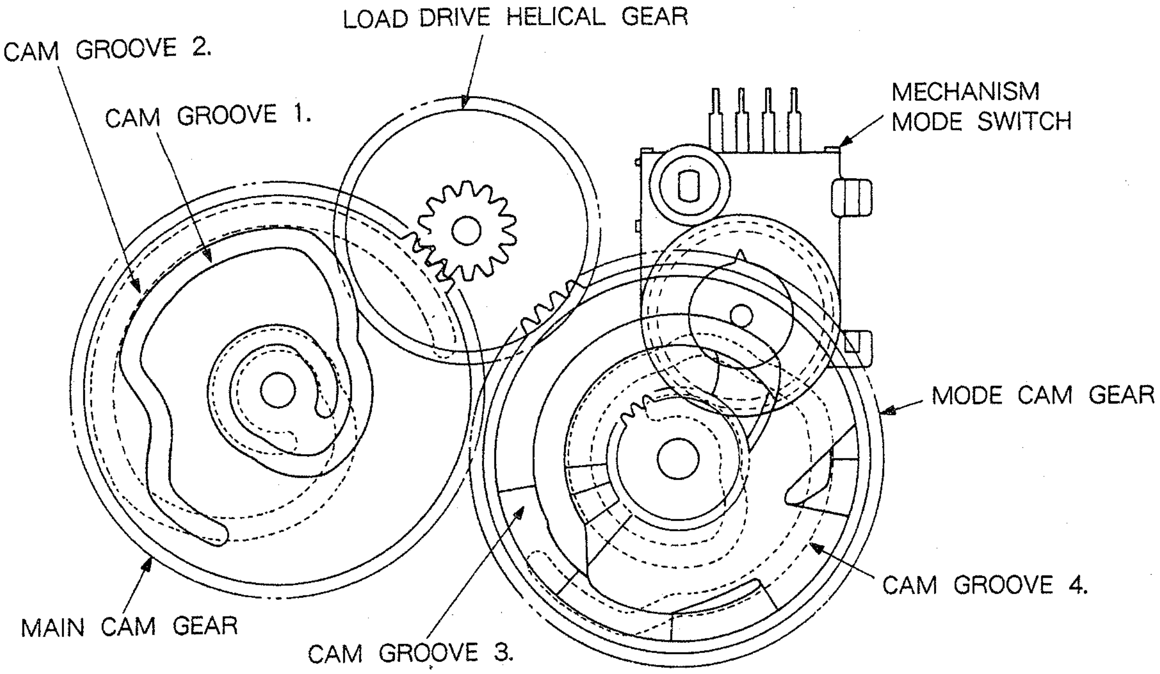


Fig. 2-3 PLAN OF CAMS CONSTRUCTION

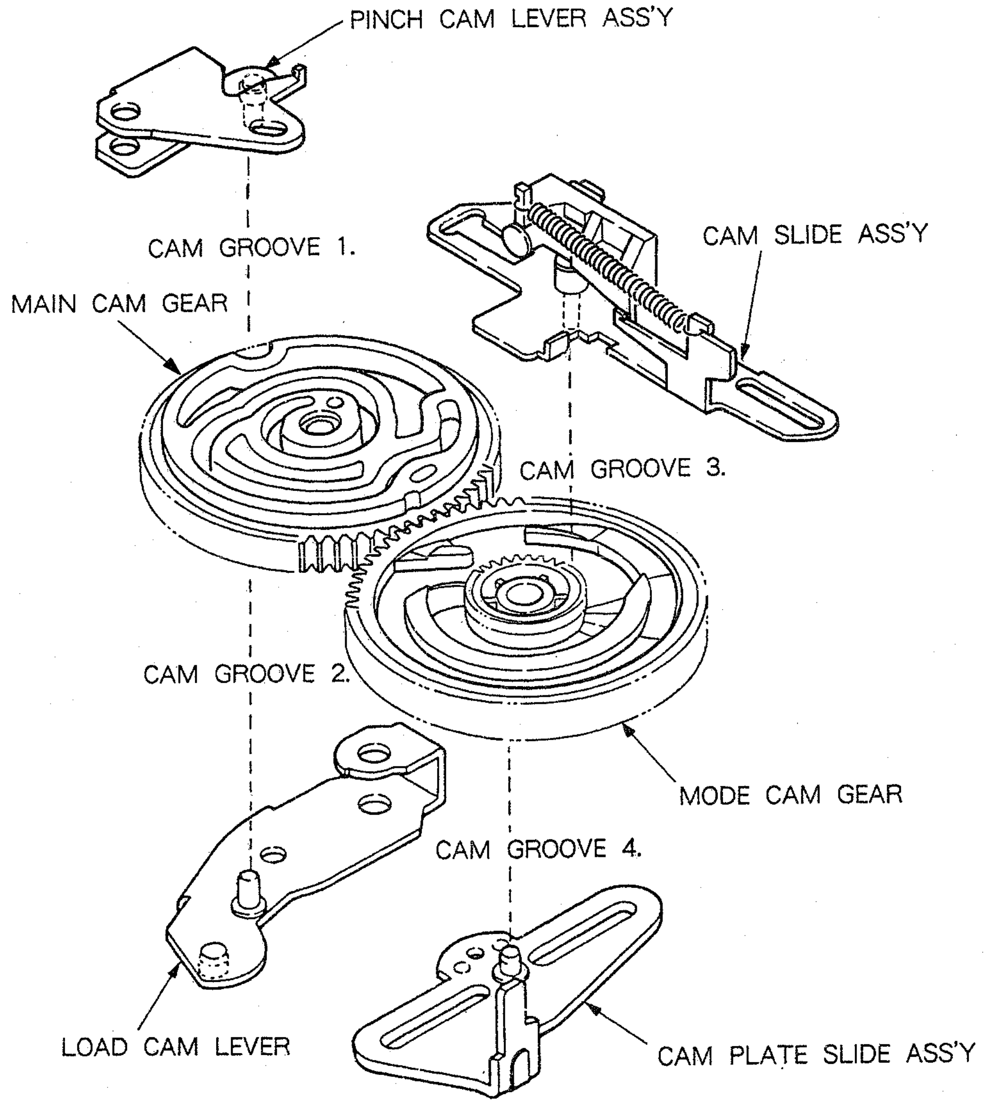

PINCH CAM LEVER ASS'Y
CAM GROOVE 1.
CAM SLIDE ASS'Y
MAIN CAM GEAR
CAM GROOVE 3.
CAM GROOVE 2.
MODE CAM GEAR
CAM GROOVE 4.
LOAD CAM LEVER
CAM PLATE SLIDE ASS'Y

Fig. 2-4 VIEW OF CAMS CONSTRUCTION

2-2-1. Tape Loading Mechanism

The tape loading mechanism is compactly designed with use of a LOAD RACK for loading by drive from the before-mentioned MAIN CAMs with CAM GROOVE 2. The LOAD RACK is laid on the dead space in between the DD capstan motor and the head motor for effective space utilization.(Fig. 2-5) The process from tape pull-out upon loading to contact of the leading guide section with the stopper of drum base and press-fitting under tension of spring is guided and driven in such a manner that the rod is drawn inward from the outer circumferential direction of the CAM GROOVE 2, thereby reducing the load torque (PV value) to the CAM GROOVE. And, the load of the loading motor is minimized to enhance reliability.

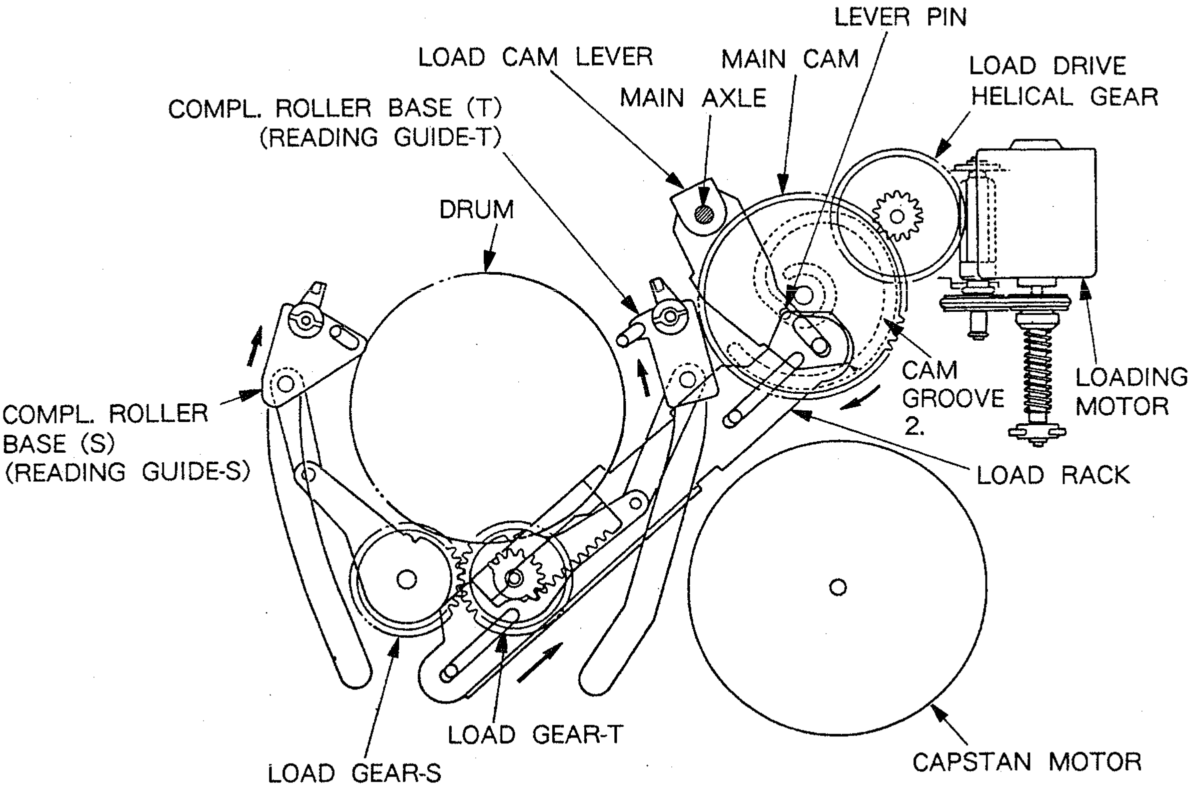

LEVER PIN
LOAD CAM LEVER
MAIN CAM
LOAD DRIVE HELICAL GEAR
MAIN AXLE
COMPL. ROLLER BASE (T) (READING GUIDE-T)
DRUM
CAM GROOVE 2.
LOADING MOTOR
COMPL. ROLLER BASE (S) (READING GUIDE-S)
LOAD RACK
LOAD GEAR-T
LOAD GEAR-S
CAPSTAN MOTOR

Fig. 2-5 CONSTRUCTION OF TAPE LOADING MECHANISM

2-2-2. Pinch Roller Pressing Mechanism
The PINCH LEVER assembly of the pinch roller is operated by the PINCH CAM LEVER (rod) driven by the CAM GROOVE 1 of the before-mentioned MAIN CAM, and then press-fitted to the capstan. The revolving tape guide (REV.GUIDE) is interlockingly operated with the PINCH LEVER assembly to ensure stable tape running at a fixed speed. (Fig. 2-6)

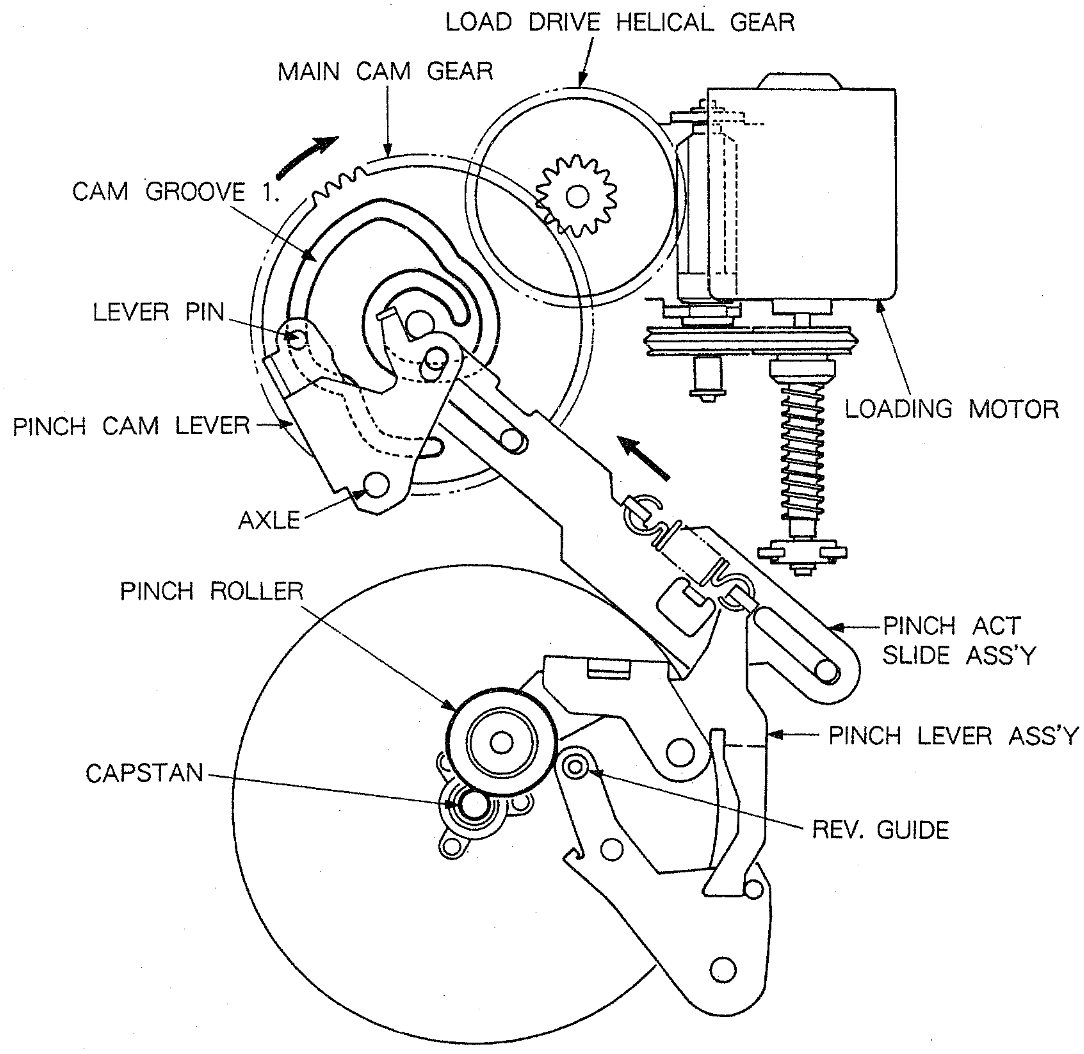

LOAD DRIVE HELICAL GEAR
MAIN CAM GEAR
CAM GROOVE 1.
LEVER PIN
PINCH CAM LEVER
AXLE
PINCH ROLLER
CAPSTAN
LOADING MOTOR
PINCH ACT SLIDE ASS'Y
PINCH LEVER ASS'Y
REV. GUIDE

Fig. 2-6 CONSTRUCTION OF PINCH ROLLER MECHANISM

2-2-3. Operation of Brake Control Plate

The ACT SLIDE PLATE and the MAIN SLIDE PLATE shown in Fig. 2-7 is driven by the CAM GROOVE 4 of the MODE CAM GEAR for precise control of operations including the control of back tension lever, auxiliary brake (SUB BRAKE S/T), main brake (SUPPLY BRAKE and TAKE-UP BRAKE), clutch selection, and drive selection of front loading mechanism.

Also, the mechanism mode switch is engaged with the small gear of the MODE CAM GEAR for sync rotation. At the time, the detection position of each mode is set so that it becomes the flat section at the cam curve of the CAM GROOVE 4 of the MODE CAM GEAR. So, even if motor stop time deviation occurs due to the load following the detection of the loading motor stop position, the control plate linked with a stop in the specified position.

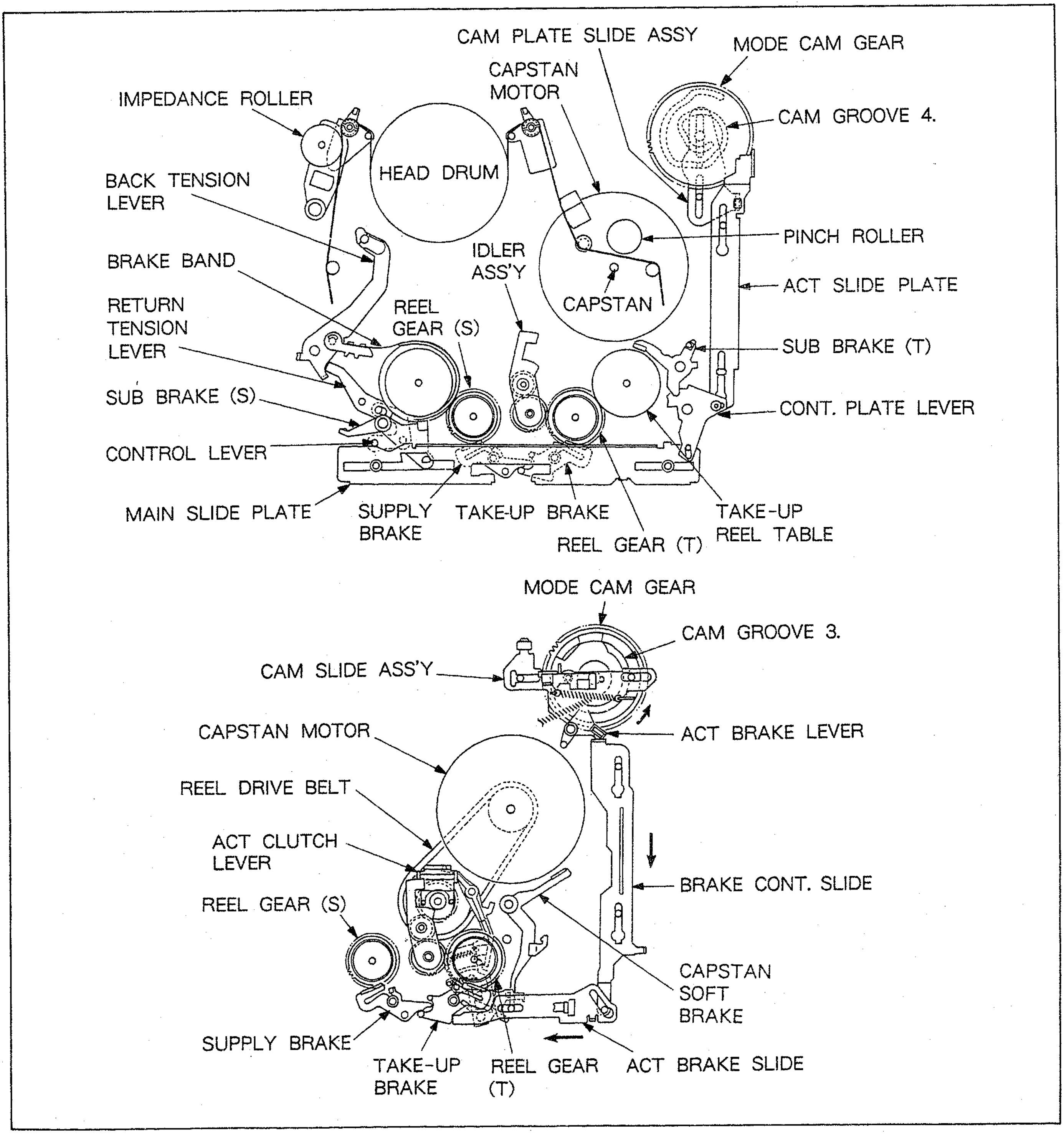

CAM PLATE SLIDE ASSY
MODE CAM GEAR
CAPSTAN MOTOR
IMPEDANCE ROLLER
CAM GROOVE 4.
HEAD DRUM
BACK TENSION LEVER
PINCH ROLLER
BRAKE BAND
IDLER ASS'Y
ACT SLIDE PLATE
RETURN TENSION LEVER
REEL GEAR (S)
CAPSTAN
SUB BRAKE (T)
SUB BRAKE (S)
CONT. PLATE LEVER
CONTROL LEVER
MAIN SLIDE PLATE
SUPPLY BRAKE
TAKE-UP BRAKE
REEL GEAR (T)
TAKE-UP REEL TABLE
MODE CAM GEAR
CAM GROOVE 3.
CAM SLIDE ASS'Y
CAPSTAN MOTOR
ACT BRAKE LEVER
REEL DRIVE BELT
ACT CLUTCH LEVER
BRAKE CONT. SLIDE
REEL GEAR (S)
CAPSTAN SOFT BRAKE
SUPPLY BRAKE
TAKE-UP BRAKE
REEL GEAR (T)
ACT BRAKE SLIDE

Fig. 2-7 CONSTRUCTION OF BRAKE CONTROL PLATE (AT REW/FF, STOP MODE)

2-2-4. Brake Control Mechanism

The mechanical logic of the brake state is shown in Fig. 2-8. The brake which damps the reel rotation is operated by the BRAKE CONTROL SLIDE driven from the CAM GROOVE 3 of the MODE CAM GEAR.

Also, to alleviate damage to the tape caused by high tension of the brake in operation, the tape is stopped after brake operation and the shape is thoughtfully designed for proper biting-in ratio of the left and the right brakes after-mentioned to each other.

This enables the supply brake to be released by the operation of the above-mentioned MAIN SLIDE PLATE after an elapse of prefixed slight time to reduce the tape tension to zero, and to provide the tape with a proper degree of looseness. As a result, a slight gap is created in the tape from the HEAD DRUM.

Further, a momentary still mechanism which dispenses with use of a plunger solenoid is not provided as one of design features of the P-90 mechanism.

To stabilize the image in an extremely short period of time during a shift to the STILL mode from the PLAY mode, the auxiliary brake (CAPSTAN SOFT BRAKE) is press-fit to the outer circumference of the capstan motor by the before-mentioned CAM GROOVE 3 of the MODE CAM GEAR.

These operations is interlocked with the operation of the before-mentioned ACT SLIDE PLATE and the MAIN SLIDE PLATE. It consists of one MODE CAM for offsetting the operating position.

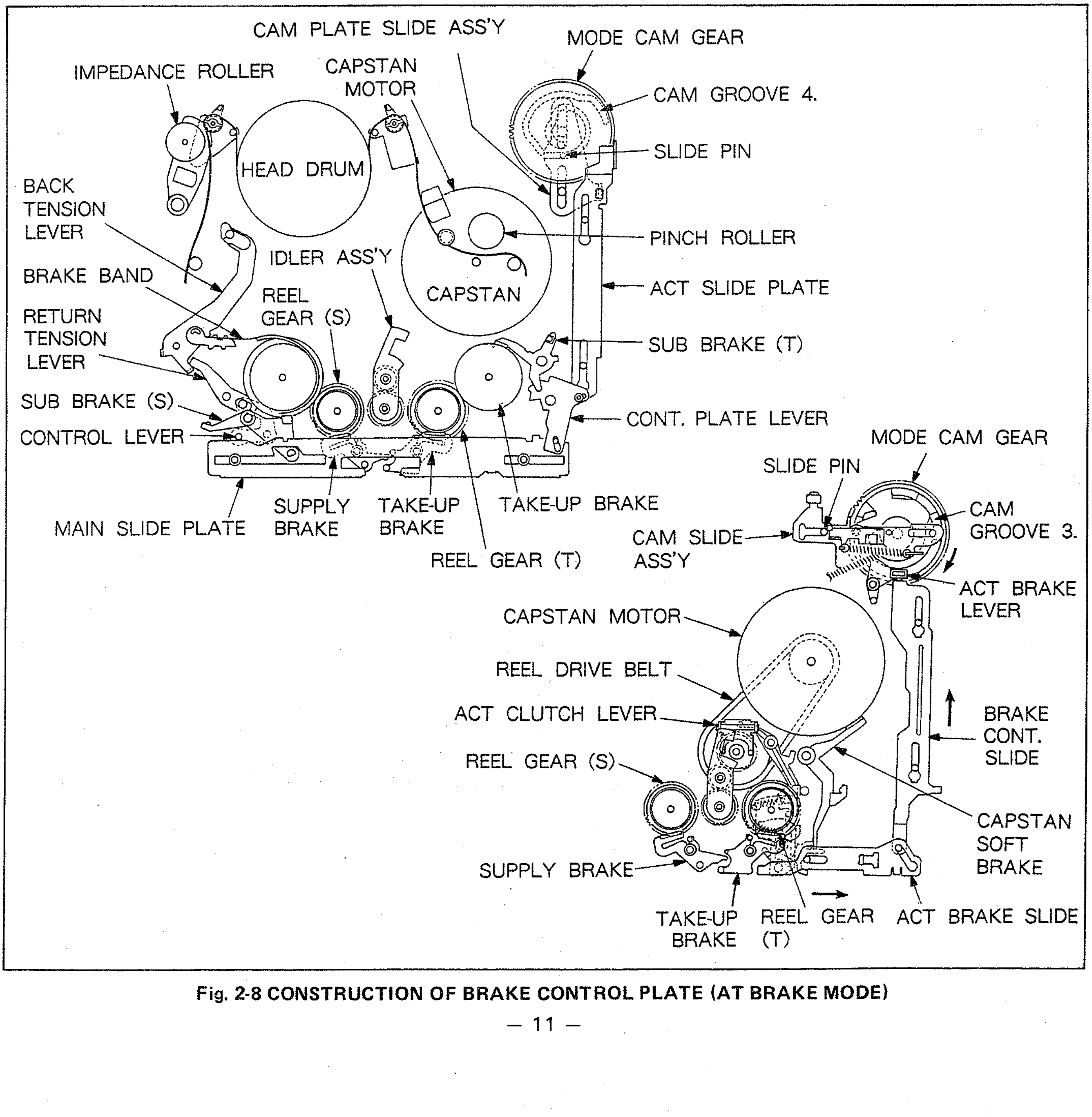

CAM PLATE SLIDE ASS'Y
MODE CAM GEAR
IMPEDANCE ROLLER
CAPSTAN MOTOR
CAM GROOVE 4.
SLIDE PIN
HEAD DRUM
BACK TENSION LEVER
PINCH ROLLER
IDLER ASS'Y
BRAKE BAND
REEL GEAR (S)
CAPSTAN
ACT SLIDE PLATE
RETURN TENSION LEVER
SUB BRAKE (T)
SUB BRAKE (S)
CONT. PLATE LEVER
CONTROL LEVER
MODE CAM GEAR
SLIDE PIN
MAIN SLIDE PLATE
SUPPLY BRAKE
TAKE-UP BRAKE
TAKE-UP BRAKE
REEL GEAR (T)
CAM SLIDE ASS'Y
CAM GROOVE 3.
ACT BRAKE LEVER
CAPSTAN MOTOR
REEL DRIVE BELT
ACT CLUTCH LEVER
BRAKE CONT. SLIDE
REEL GEAR (S)
CAPSTAN SOFT BRAKE
SUPPLY BRAKE
TAKE-UP BRAKE
REEL GEAR (T)
ACT BRAKE SLIDE

Fig. 2-8 CONSTRUCTION OF BRAKE CONTROL PLATE (AT BRAKE MODE)

2-2-5. Brake Lock Release Mechanism (FF/REW→STOP Mode)

The brake lock momentary release mechanism is shown in Fig. 2-9 ⓐ, ⓑ and Fig. 2-10.
In the FF/REW mode (Fig. 2-9 ⓐ) mechanical elastic load is given to the BRAKE LOCK LEVER mounted on the BRAKE CAM SLIDE which causes the brake to operate, and it is locked to the high-speed rotary axle of the 1st reducing section of the loading motor.

ⓐ changes from brake mode or lock released state to FF/REW, STOP mode.

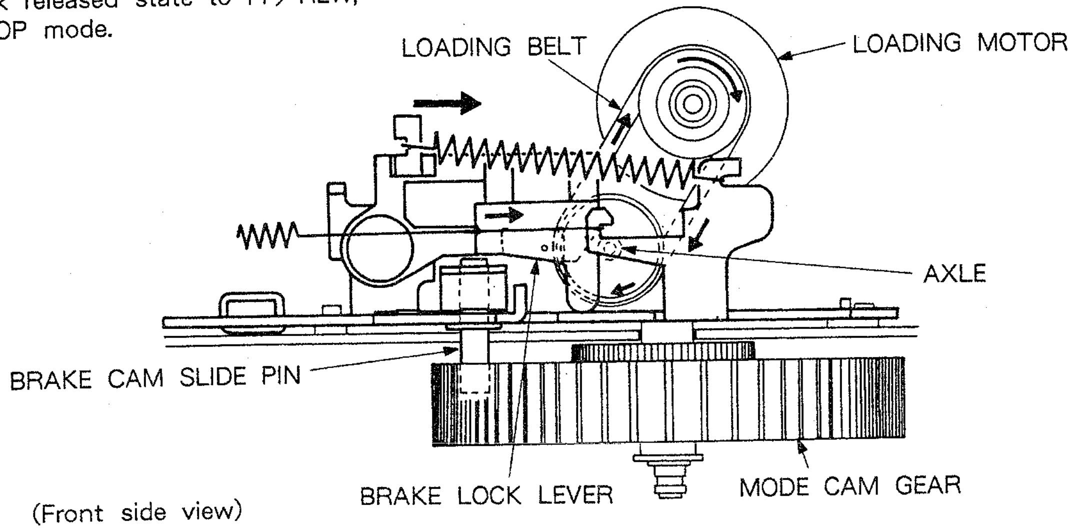
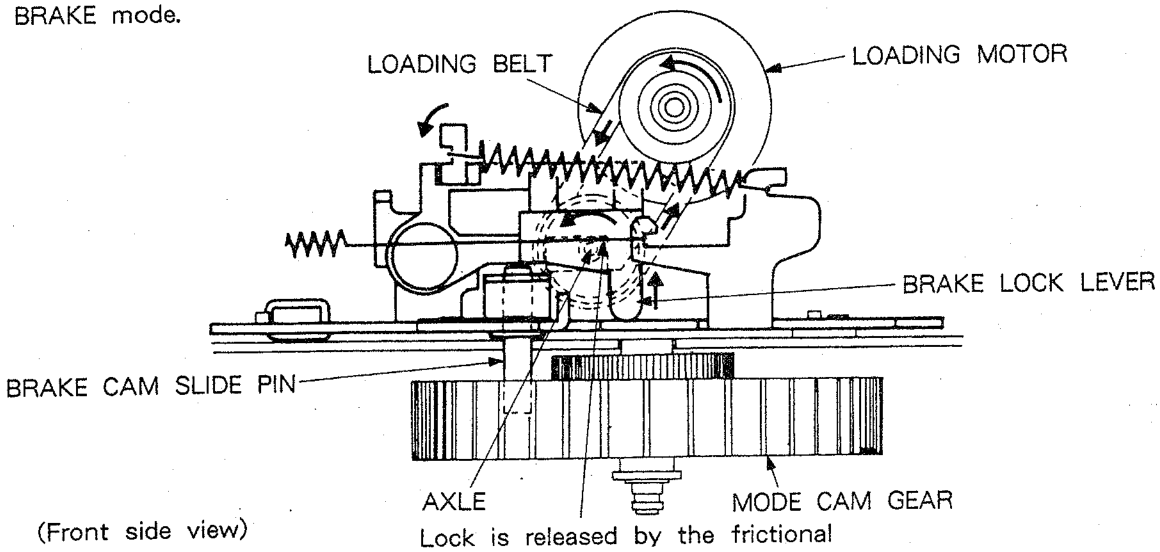

LOADING BELT
LOADING MOTOR
AXLE
BRAKE CAM SLIDE PIN
BRAKE LOCK LEVER
MODE CAM GEAR
(Front side view)

Fig. 2-9 ⓐ BRAKE LOCK & RELEASE MECHANISM

At the time of a shift to the STOP mode from the FF/REW (Fig. 2-9 ⓑ), the BRAKE LOCK LEVER releases the lock on slight rotation of the axle by contact between the rotary shaft and the friction resistance so that the brake can be instantaneously applied to the reel. The lock release speed is almost the same as the start-up of the loading motor. So, the its response to the brake is very quick, and construction is simplified also.

ⓑ Changes from FF/REW, STOP mode to BRAKE mode.


LOADING BELT
LOADING MOTOR
BRAKE LOCK LEVER
BRAKE CAM SLIDE PIN
AXLE
MODE CAM GEAR
(Front side view)

Lock is released by the frictional resistance of an elastic load.

Fig. 2-9 ⓑ BRAKE LOCK & RELEASE MECHANISM

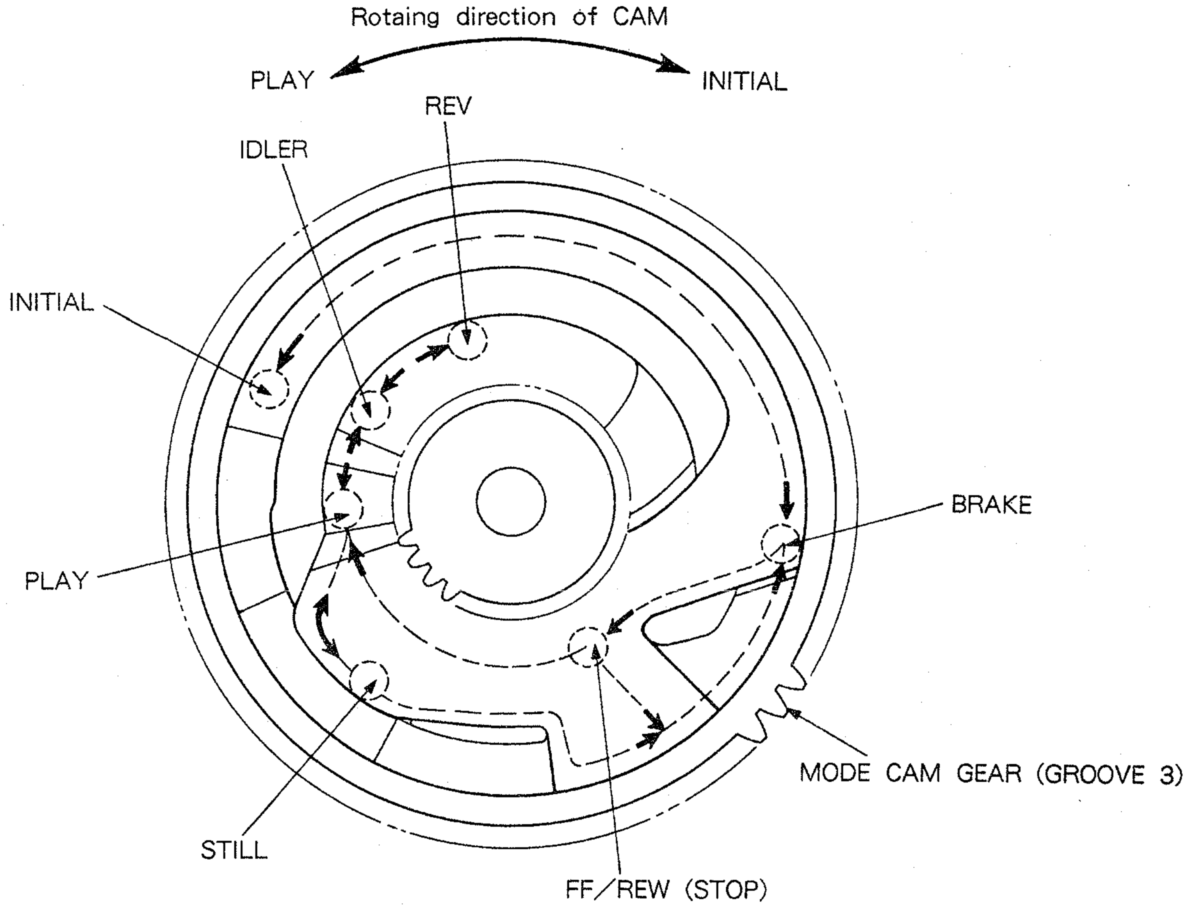

Rotaing direction of CAM
PLAY
INITIAL
REV
IDLER
INITIAL
BRAKE
PLAY
MODE CAM GEAR (GROOVE 3)
STILL
FF/REW (STOP)

Fig. 2-10 POSITIONING OF BRAKE CAM SLIDE-PIN ON THE GROOVE 3 OF MODE CAM GEAR

2-3. REEL TABLE DRIVE

2-3-1. Reel Table Drive Mechanism

This mechanism employs the system of driving the tape from the DD capstan motor via rubber belt. In the tape constant speed running mode for PLAY, F-SEARCH, and R-SEARCH, the capstan and the pinch roller are press-fitted to allow the tape to run at a constant speed. By providing a FRICTION MECHANISM in between the capstan motor and the reel table, the tape is taken up. In the FF/REW tape high-speed take-up mode, the capstan and the pinch roller are separated from each other, and the capstan motor and the reel table are linked direct by the clutch mechanism to carry out tape take-up. Also, to realize a thin type reel table drive section, the mechanism is simplified and the rotary parts are thinned for realization of physically compact design, and a step is provided on the reel table mounting section of the chassis by high-precision drawing process. A simplified figure of the drive mechanism is shown in Fig. 2-11 and Fig. 2-12. Power transmission to the pulley of the clutch mechanism section is done from the DD capstan motor via rubber belt.

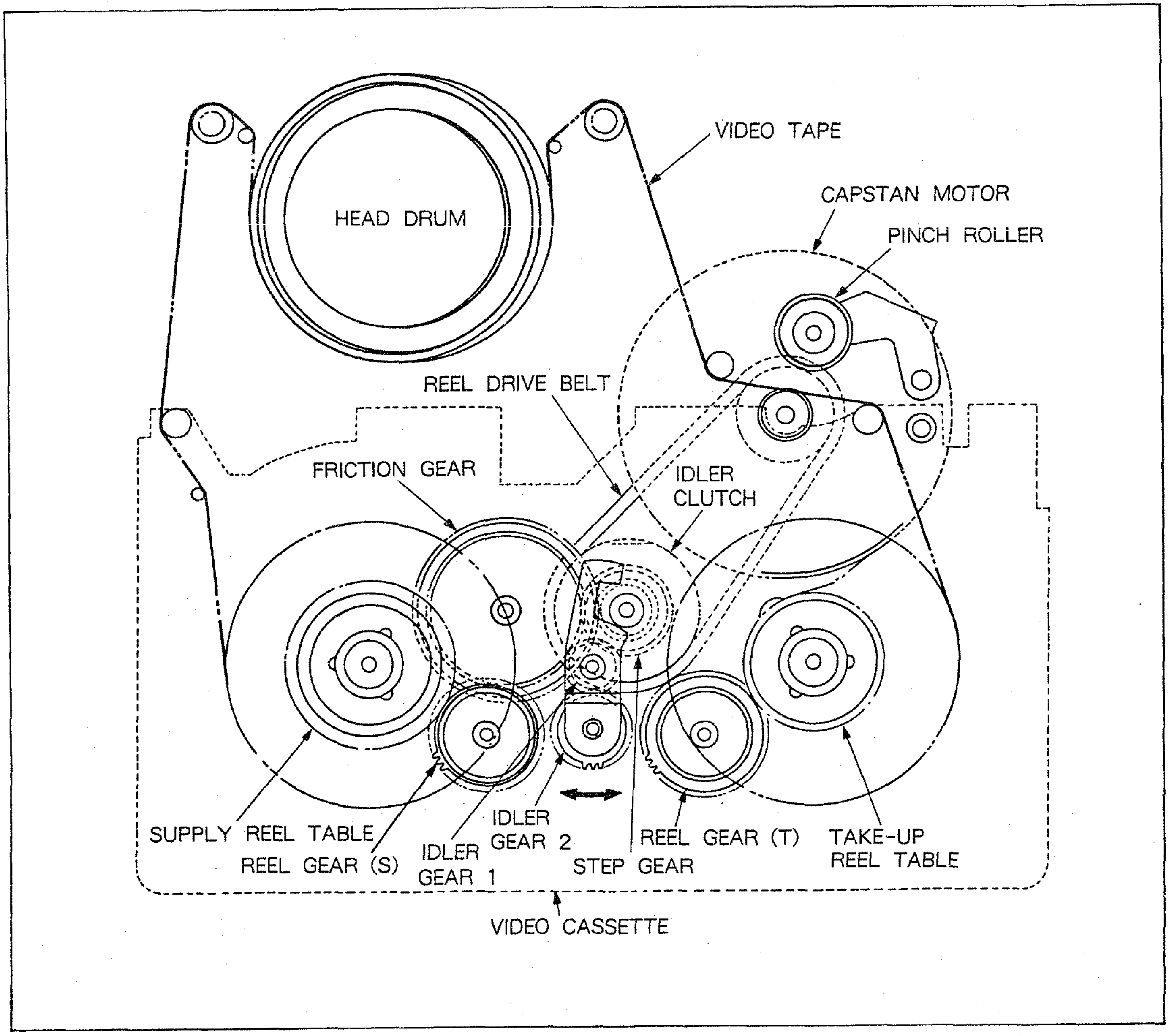
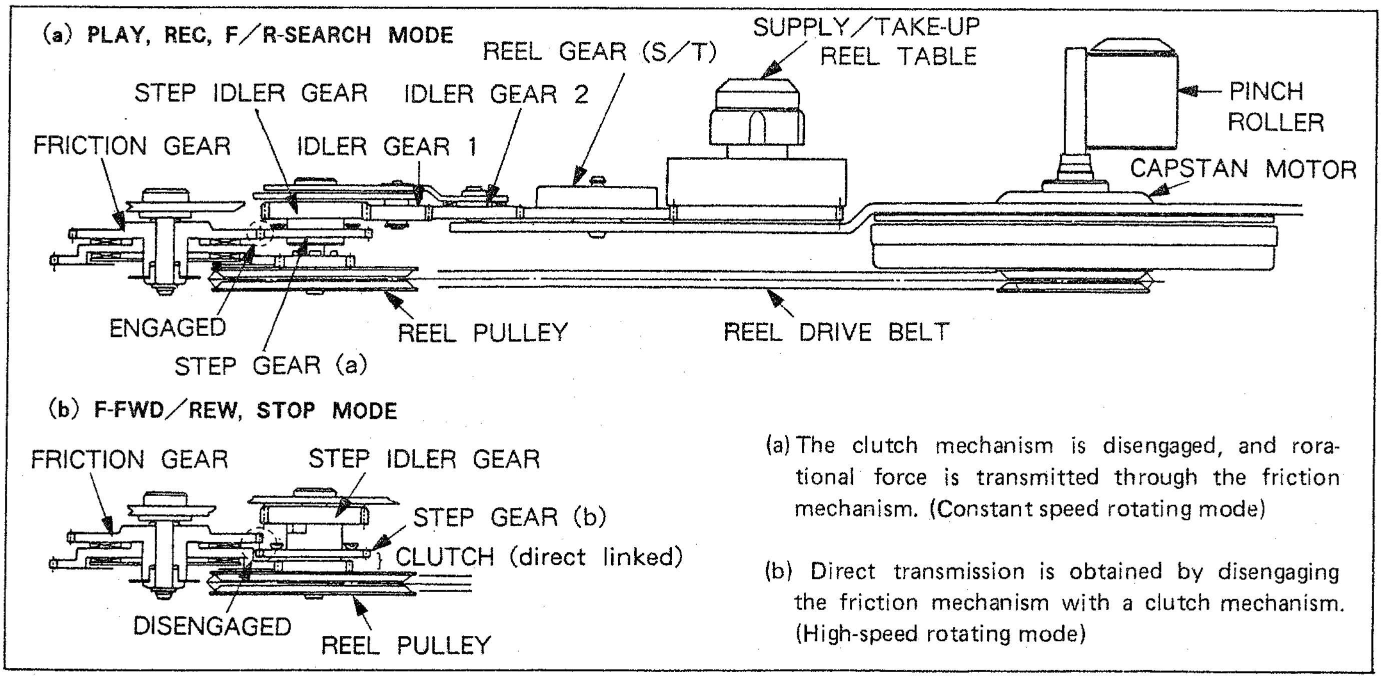

VIDEO TAPE
CAPSTAN MOTOR
PINCH ROLLER
HEAD DRUM
REEL DRIVE BELT
FRICTION GEAR
IDLER CLUTCH
SUPPLY REEL TABLE
REEL GEAR (S)
IDLER GEAR 1
IDLER GEAR 2
STEP GEAR
REEL GEAR (T)
TAKE-UP REEL TABLE
VIDEO CASSETTE

Fig. 2-11 REEL TABLE DRIVE

At that time, the reel table winding speed and the torque needed in a wide variety of modes are obtained by shifting the up and down STEP GEAR positioned at the upper section of pulley. The selection of the STEP GEAR is precision controlled by the MODE CAM GEAR via the BRAKE CONTROL SLIDE. With the up and down STEP GEAR down, the clutch mechanism is direct linked, and the transmission power from the capstan motor is sent to the reel table via IDLER GEAR assembly and REEL GEAR (S/T). On the other hand, FRICTION MECHANISM acts between the pulley and the STEP GEAR when the up and down STEP GEAR are in the elevated state, thereby controlling the transmission torque for generation of the take-up slip. Normally, it is desirable that the take-up torque of the reel table is higher in the R-SEARCH mode than that in the PLAY mode. This is because in the forward tape running the tape winding load to the HEAD DRUM has to be taken care of the capstan and the pinch roller.
While, in the reverse tape running mode the winding load has to be taken on the take-up reel table. In the special playback operation, a mechanism for varying the take-up torque of the reel table is required to be changed depending upon the running direction of the tape. But in this mechanism, the torque selection is made by varying the reduction speed ratio up to the reel table from the capstan motor on both the forward side and the reverse side of the tape. Also, design simplification of the selection mechanism is realized by using a single friction mechanism. In other words, the take-up torque necessary for forward/reverse rotation is obtained by controlling the capstan motor speed.

Rotation speed and torque needed for each mode of operation are converted by clutch mechanism for transmission of the drive power to the idler mechanism. The left and right moving IDLER GEAR assembly is automatically rotated to the left and the right according to the direction of capstan motor rotation by using the friction force. Because the mechanism is so designed as to drive the reel table of the side on which the tape is transported by the capstan and pinch roller, the forward and reverse constant speed drive (the PLAY, REC, F/R SEARCH modes) is carried out in the state in which the FRICTION MECHANISM is being operated (Fig. 2-12 ⓐ) On the other hand, in the condition in which the friction mechanism is not in operation, the forward/reverse high speed drive (FF/REW mode) is made possible (Fig. 2-12 ⓑ). Also, the reel drive in all modes is taken care of by the single left and right moving idler for design simplification.

The idler body employs gear drive to improve reliability with a view to realizing parts thinning while securing the transmission reliability. Using a resin molded gear as material of an idler, the efficiency of the entire reel drive system has been improved because there are no deformation and loss, and minimized rotation moving torque necessary for biting-in as in the case of a material such as rubber which shows considerable elastic deformation, etc. Further in this mechanism, an intermediate gear is provided in between the reel side and the idler to minimize the rotating and moving angle of the left and right moving idlers, thereby holding the reversing time to a minimum when shifting to the tape running direction change mode. This results in significantly reduced possibility of tape looseness.


(a) PLAY, REC, F/R-SEARCH MODE

(b) F-FWD/REW, STOP MODE

(a) The clutch mechanism is disengaged, and rorational force is transmitted through the friction mechanism. (Constant speed rotating mode)

(b) Direct transmission is obtained by disengaging the friction mechanism with a clutch mechanism. (High-speed rotating mode)

Fig. 2-12 REEL TABLE DRIVE (SIDE VIEW)

2-3-2. Reel Table Drive Clutch Lock and Release Mechanism

As described in the preceding section, using the selection of the step gear (CLUTCH MECHANISM), two mechanisms which are driven by being selected via direct drive or via FRICTION MECHANISM from the capstan motor, to execute the reel table drive. The operating status of the clutch lock and the releasing mechanism is shown in Fig. 2-13.

Fig. 2-13 ① shows the tape unloading position (INITIAL position) when the power for the mechanism operating mode is switched off.

At that times all the levers are in the initial positions, and the clutch is released also so that a route for reel table drive is created via a friction mechanism.

Fig. 2-13 ② shows that the mechanism operation mode has executed the tape loading and that it has completed its movement to the STOP (stand-by), FF/REW position.

At this time, the CLUTCH ACT LEVER is operated by the hook of the ACT BRAKE SLIDE to move the ACT CLUTCH LEVER in the direction of arrow via the CLUTCH LEVER and the CLUTCH CHANGE LEVER. Now, the up and down STEP GEAR is placed into the direct coupled state. In the FF/REW mode, the reel table is directly driven so that the rotation of the capstan motor is directly transmitted to make high-speed rotation drive possible. When shifting the mode to the STOP from the FF/REW in this condition, the mechanism mode position is once moved back to the brake position, and when the reel table brake is instantaneously applied, the clutch is released once at the same time, after which it returns to the same mechanism mode as the FF/REW mode once again. Now, it is placed in a waiting state in the same condition of the STOP mode as shown in Fig. 2-13 ②.

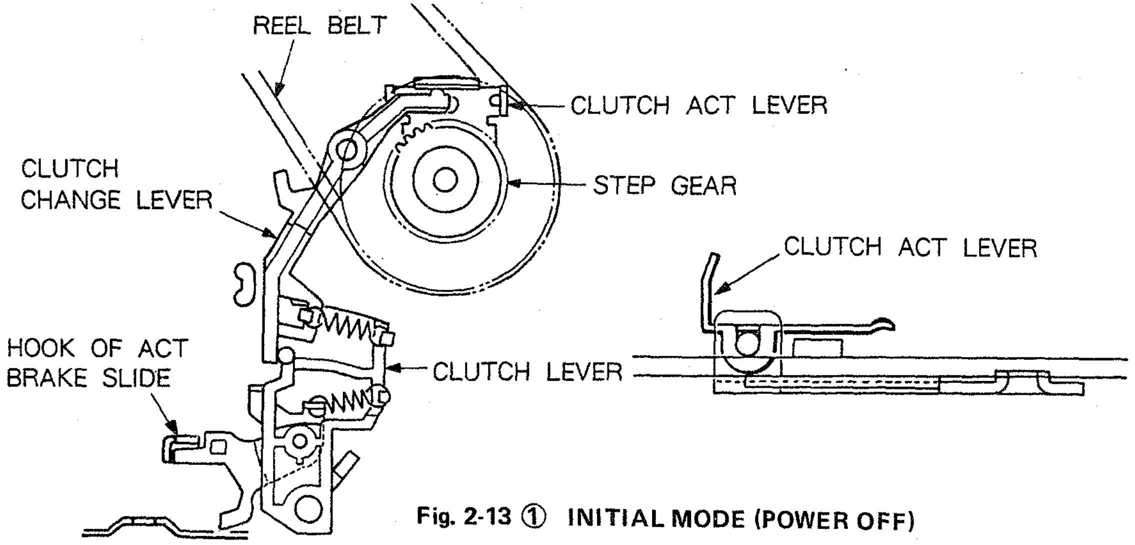

REEL BELT
CLUTCH ACT LEVER
CLUTCH CHANGE LEVER
STEP GEAR
CLUTCH ACT LEVER
HOOK OF ACT BRAKE SLIDE
CLUTCH LEVER

Fig. 2-13 ① INITIAL MODE (POWER OFF)

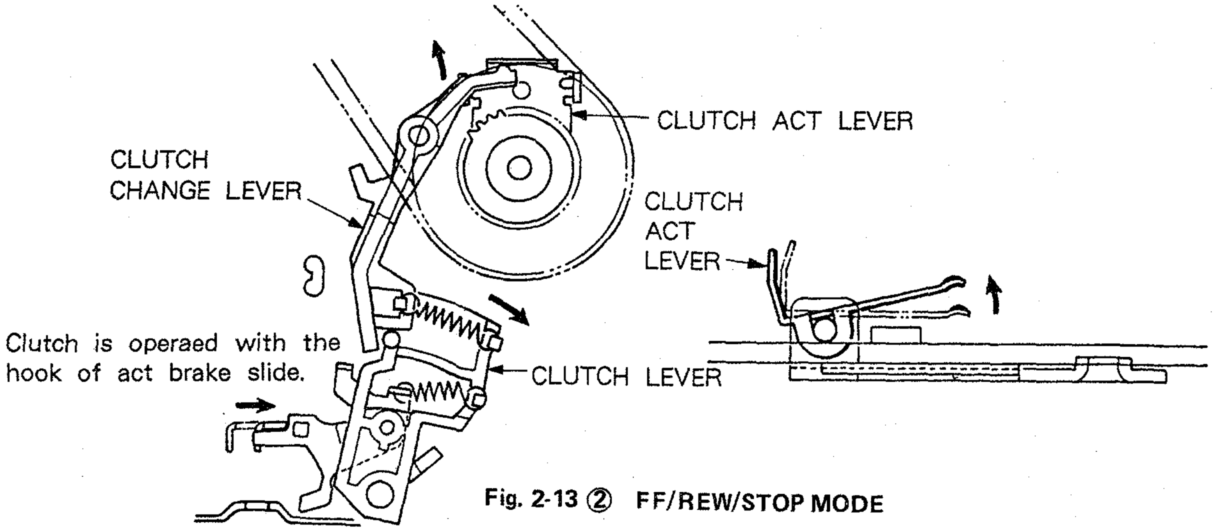
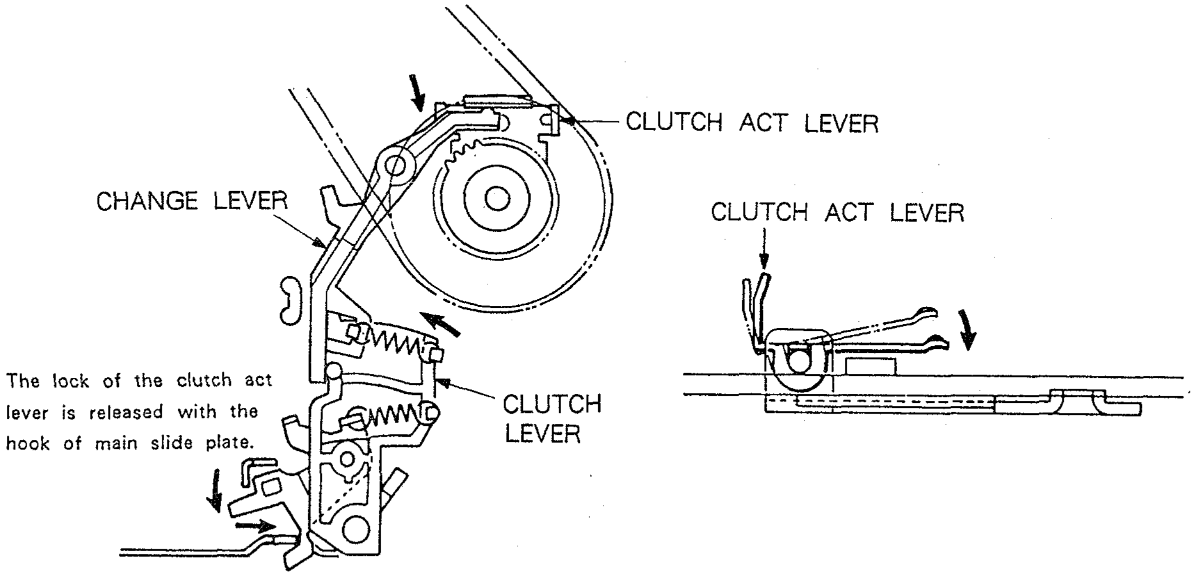

CLUTCH ACT LEVER
CLUTCH CHANGE LEVER
CLUTCH ACT LEVER
Clutch is operaed with the hook of act brake slide.
CLUTCH LEVER

Fig. 2-13 ② FF/REW/STOP MODE

Fig. 2-13 ①– ③ REEL TABLE DRIVE CLUTCH LOCK AND RELEASE MECHANISM

Fig. 2-13 ③ shows the completion state of a shift to the PLAY mode via the STILL mode from the STOP (FF／REW) mode for the mechanism mode position.

In the case of this mode shifting, the movement of the BRAKE ACT SLIDE remains fixed. So, the CLUTCH ACT LEVER should be unlocked by the movement of the hook of the MAIN SLIDE PLATE to cause the clutch to be released. This movement in turn causes the capstan motor rotation to be transmitted via the friction mechanism. So, the constant speed rotation drive necessary for the PLAY (REC) mode and SEARCH mode is made possible.



The lock of the clutch act lever is released with the hook of main slide plate.

Fig. 2-13 ③ FF/REW/STOP MODE → STILL MODE → PLAY MODE

2-4. FRONT LOADING DRIVE SELECTION MECHANISM

In the P-90 mechanism, the motor dedicated to the use of front loading is not employed. The drive source is utilized instead of the tape loading motor. As shown in Fig. 2-14 ⓐ/ⓑ, during the front loading the FRONT LOAD WORM GEAR directly coupled to the tape loading motor axle and the FRONT HELICAL GEAR with several teeth missing are engaged with each other and rotated for transmission of the drive force to the front loading mechanism. When the cassette tape is inserted completely in the mechanism, the FRONT HELICAL GEAR is automatically disengaged from the FRONT LOAD WORM GEAR. After that, the tape loading operation is performed without the tape loading motor drive force being transmitted to the front loading mechanism.

While the drive force is being transmitted to the front loading mechanism, the CAM GROOVEs of the before-mentioned MAIN CAM GEAR and the MODE CAM GEAR are flat in cam line pattern. These are therefore held without changing the mode state of the mechanism in any way.

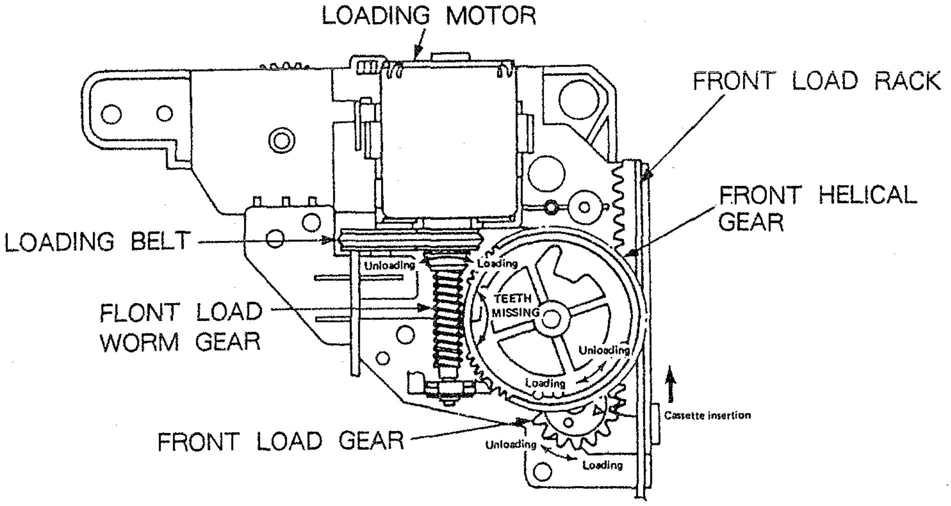

LOADING MOTOR
FRONT LOAD RACK
FRONT HELICAL GEAR
LOADING BELT
FLONT LOAD WORM GEAR
FRONT LOAD GEAR
Unloading
Loading
TEETH MISSING
Unloading
Loading
Cassette insertion
Unloading
Loading

Fig. 2-14 ⓐ **FRONT LOADING DRIVE SELECTION MECHANISM (CASSETTE INSERTED POSITION)**

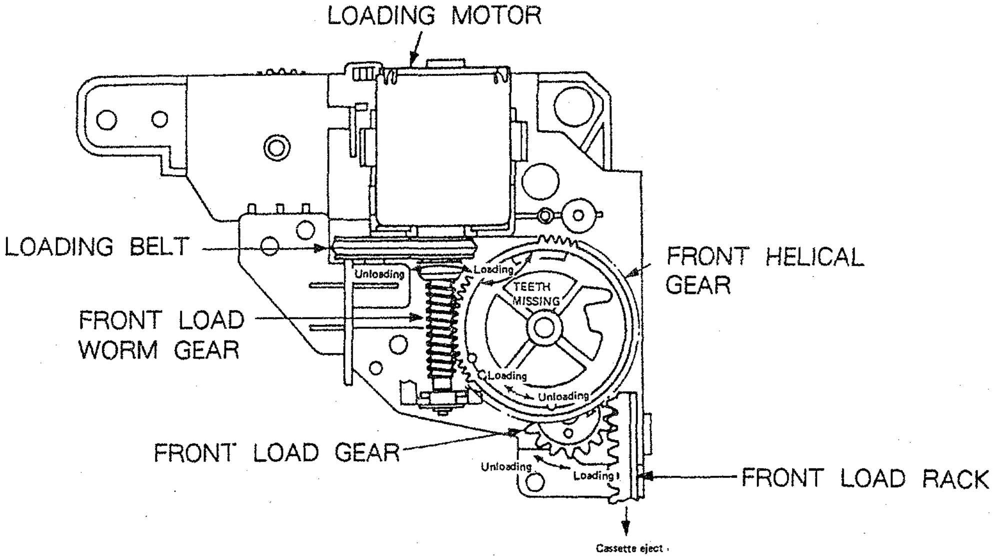

LOADING MOTOR
LOADING BELT
FRONT HELICAL GEAR
FRONT LOAD WORM GEAR
Unloading
Loading
TEETH MISSING
Loading
Unloading
FRONT LOAD GEAR
Unloading
Loading
FRONT LOAD RACK
Cassette eject

Fig. 2-14 ⓑ **FRONT LOADING DRIVE SELECTION MECHANISM (CASSETTE EJECTED POSITION)**

(A) Cassette inserting operation

When inserting a cassette from the cassette ejected state of Fig. 2-14 ⓑ, the FL START SWITCH shown in Fig. 2-15 is turned OFF, to cause the loading motor to be rotated in the direction of insetting. As a result, the FRONT LOAD RACK is drawn in, and the front loading is made up to the cassette tape completion point. So, it is locked in the grooves shown in Fig. 2-15 to complete cassette inserting. At that time, the FRONT HELICAL GEAR is positioned at ⓐ of Fig. 2-14, and is released from the front loading mechanism, therefore, the tape loading operation is continuously performed.

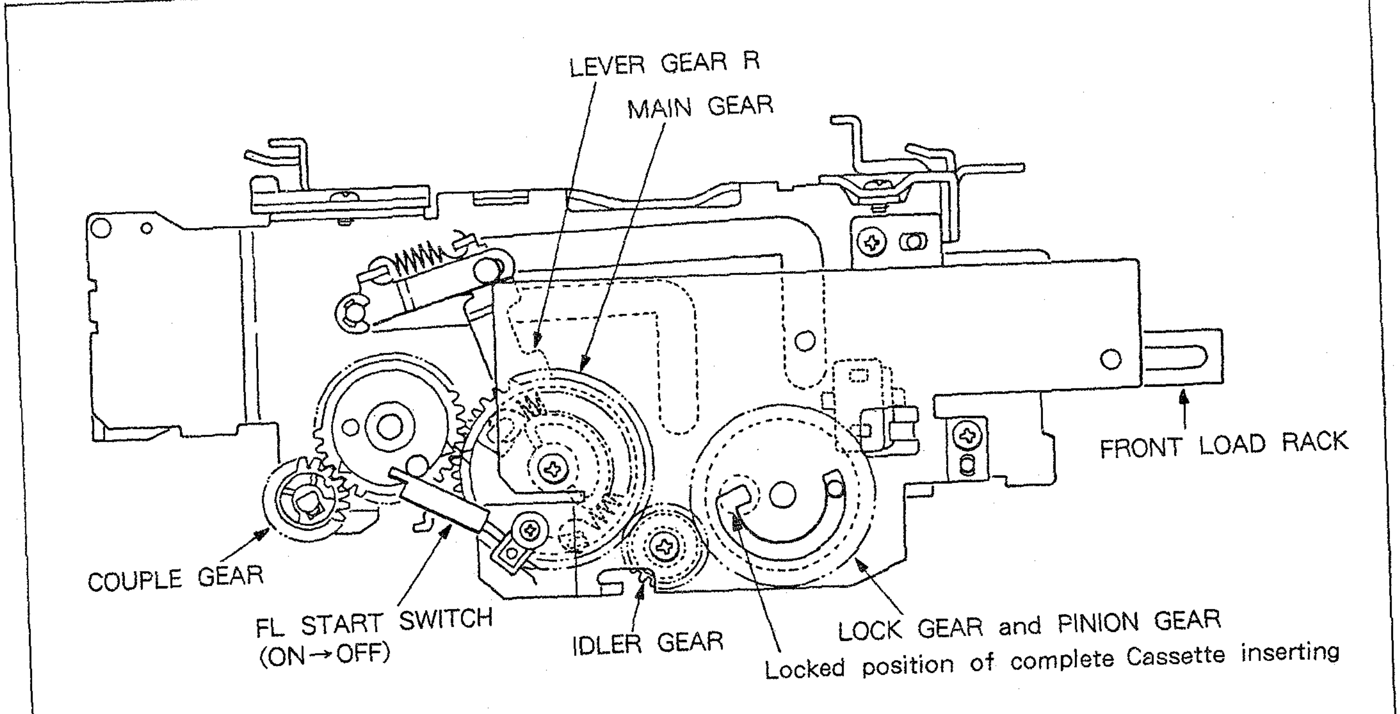

LEVER GEAR R
MAIN GEAR
FRONT LOAD RACK
COUPLE GEAR
FL START SWITCH
(ON→OFF)
IDLER GEAR
LOCK GEAR and PINION GEAR
Locked position of complete Cassette inserting

Fig. 2-15 CASSETTE HOLDER MECHANISM (CASSETTE INSERTING OPERATION)

(B) Cassette ejection operation

The components of the front loading mechanism is shown in Fig. 2-16.

When ejecting the cassette from the inserted state shown in Fig. 2-14 ⓐ, the FRONT ACT LEVER is pushed in the direction of arrow due to the ACT SLIDE PLATE moves in the direction of arrow shown in Fig. 2-17. As a result, the FRONT LEVER assembly is turned counterclockwise via the FRONT LOAD SLIDE to cause the FRONT HELICAL GEAR to be engaged with the FRONT LOAD WORM GEAR of the loading motor. At that time, the loading motor is being rotated counterclockwise, so that the FRONT HELICAL GEAR is caused to be rotated counterclockwise also to carry out the front unloading via the FRONT LOAD GEAR and the FRONT LOAD RACK. At the same time, the FRONT ACT LEVER is operated counterclockwise by the hook of the FRONT HELICAL GEAR. This releases the lock being pushed in the direction of arrow indicated by the ACT SLIDE PLATE. So, the FRONT LOAD SLIDE assembly now moves to the initial position to prepare for the next ejection operation. Incidentally, the movement of the FRONT LEVER assembly performs an important function of positioning the FRONT HELICAL GEAR (Fig. 2-14 ⓐ) upon completion of cassette mounting, in addition to the cassette eject start-up operation.

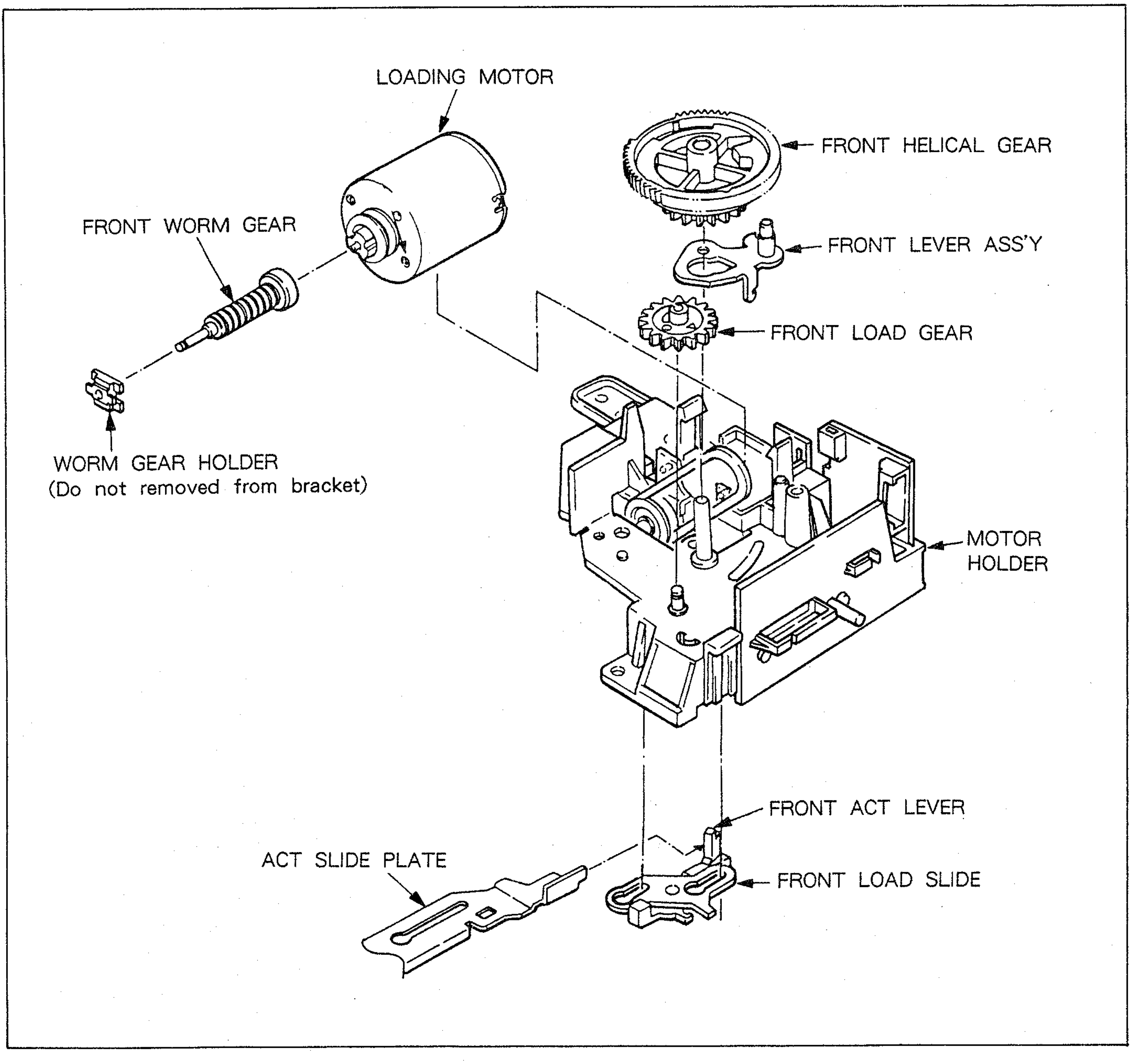
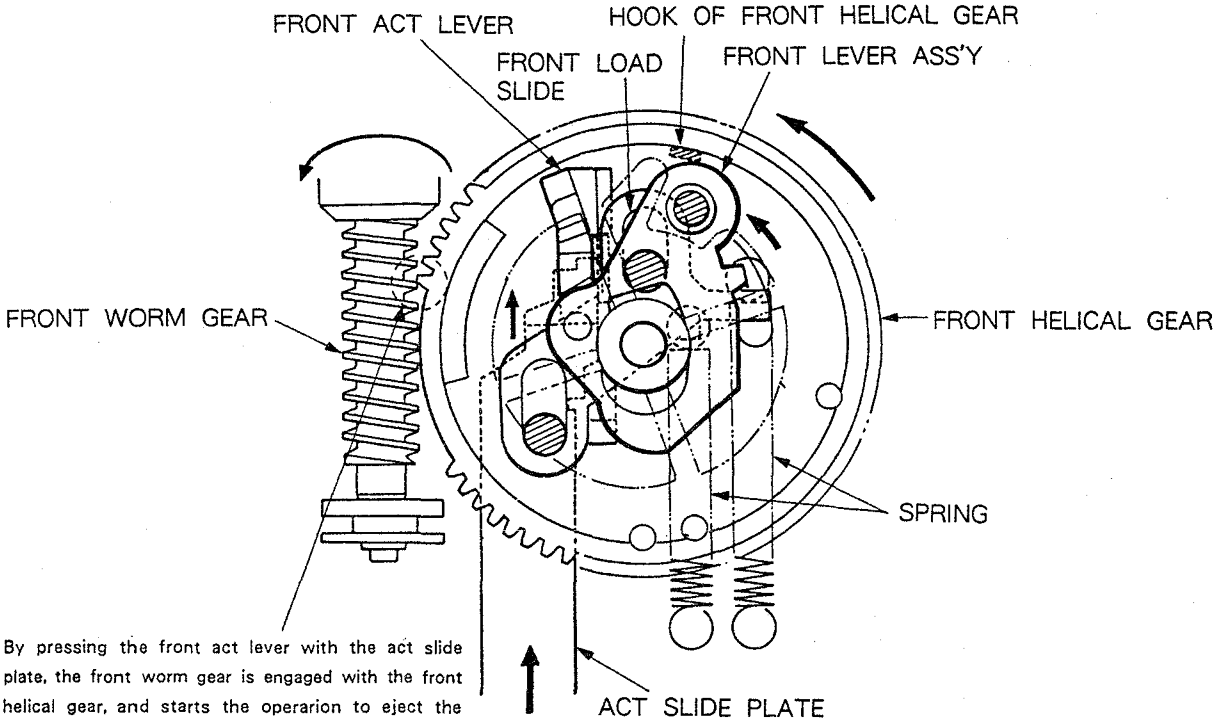

LOADING MOTOR
FRONT HELICAL GEAR
FRONT WORM GEAR
FRONT LEVER ASS'Y
FRONT LOAD GEAR
WORM GEAR HOLDER
(Do not removed from bracket)
MOTOR HOLDER
FRONT ACT LEVER
ACT SLIDE PLATE
FRONT LOAD SLIDE

Fig. 2-16 FRONT LOADING DRIVE SELECTION MECHANISM


FRONT ACT LEVER
HOOK OF FRONT HELICAL GEAR
FRONT LOAD SLIDE
FRONT LEVER ASS'Y
FRONT WORM GEAR
FRONT HELICAL GEAR
SPRING
ACT SLIDE PLATE

By pressing the front act lever with the act slide plate, the front worm gear is engaged with the front helical gear, and starts the operarion to eject the cassette.

Fig. 2-17 CASSETTE EJECTION START OPERATION (See through top view)

2-5. CASSETTE HOLDER MECHANISM

2-5-1. Components

The exploded view of the cassette holder mechanism is shown in Fig. 2-18. This mechanism consists of a cassette tray for feeding the cassette tape to the specified position of the mechanism chassis, a side plate provided with L type holes for supporting and guiding it, the top plate for regulating the width of left and right, and a group of gears for driving the cassette tray.

The entire mechanism is of independent construction apart from the mechanism body. The holder is fixed on the mechanism chassis by inserting the pawls at two points and tightening the setscrews at two points, or at a total of four points.

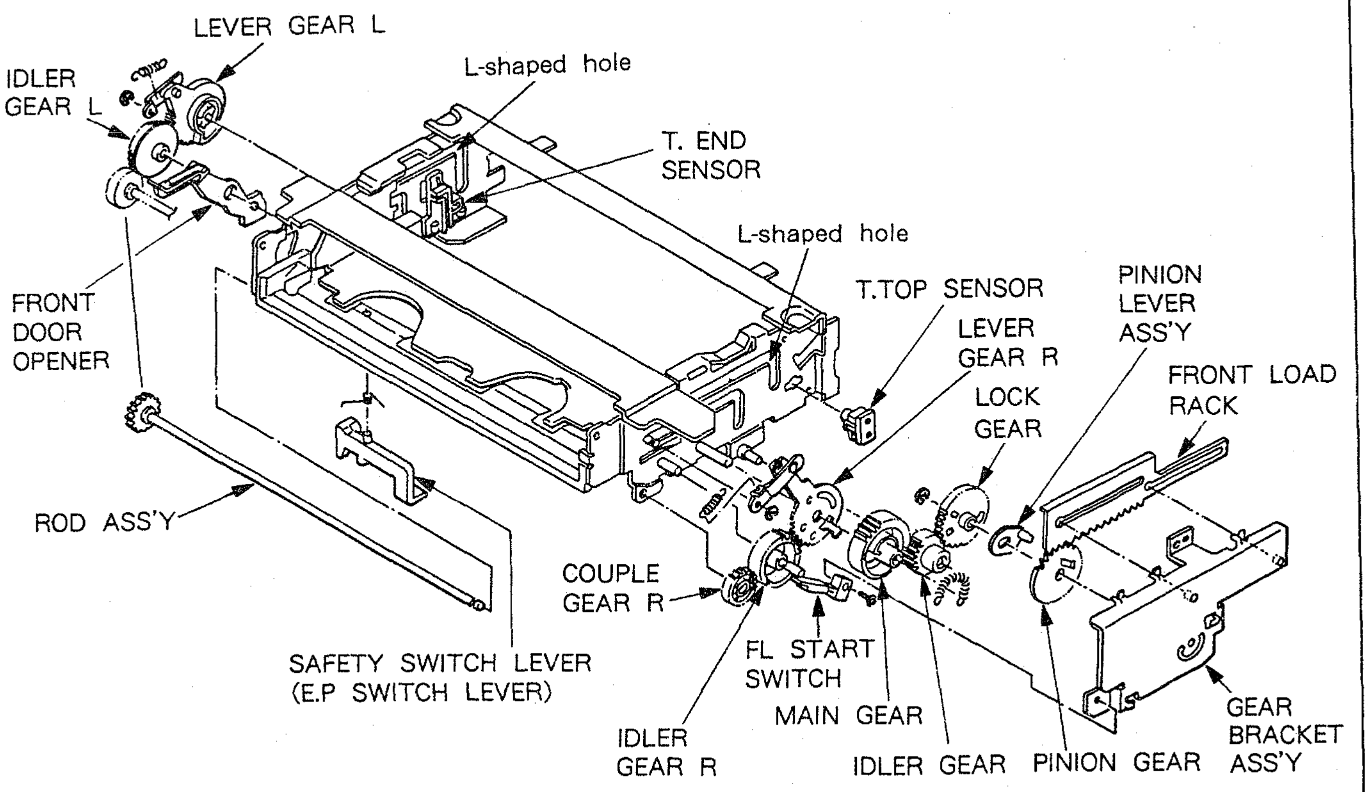

LEVER GEAR L
IDLER GEAR L
L-shaped hole
T. END SENSOR
L-shaped hole
FRONT DOOR OPENER
T.TOP SENSOR
PINION LEVER ASS'Y
LEVER GEAR R
LOCK GEAR
FRONT LOAD RACK
ROD ASS'Y
COUPLE GEAR R
SAFETY SWITCH LEVER (E.P SWITCH LEVER)
FL START SWITCH
MAIN GEAR
IDLER GEAR R
IDLER GEAR
PINION GEAR
GEAR BRACKET ASS'Y

Fig. 2-18 EXPLODED VIEW OF THE CASSETTE HOLDER MECHANISM

2-5-2. Description of Cassette Holder

The cassette holder is of motor-less design, as the lowering of mechanism height and driving source are done by the loading motor of the mechanism body.

As a substitute for the worm gear system hitherto used in the major drive section for the drive selection mechanism mentioned in section 2-4., the RACK LOADING system is adopted in this cassette holder mechanism. By this mechanism the motor-less design can be realized. An exploded view of the mechanism is shown in Fig. 2-19. A description of the operation is made below along with Fig. 2-19. To press-fit the cassette tape after sending it onto the mechanism chassis, the PINION GEAR section is triple construction. The FRONT LOAD RACK side and the IDLER GEAR side are independently engaged. The PINION GEAR and the LOCK GEAR are connected from the PINION LEVER PIN riveted to the PINION LEVER. Even after feeding the cassette tape to the specified position of the mechanism chassis, the FRONT LOAD RACK slides, giving the rotation to the PINION GEAR which is engaged with the FRONT LOAD RACK. At that time, a pin is dropped into the groove section provided on the GEAR BRACKET ASS'Y.

The other LOCK GEAR is fixed by this PINION LEVER PIN, and the cassette tape is press-fitted onto the mechanism chassis by linked IDLER GEAR. The before-mentioned FRONT LOAD RACK and the PINION GEAR are set free after dropping the PINION LEVER PIN into the groove section. So, the drive force of the loading motor is sent to the mechanism body.

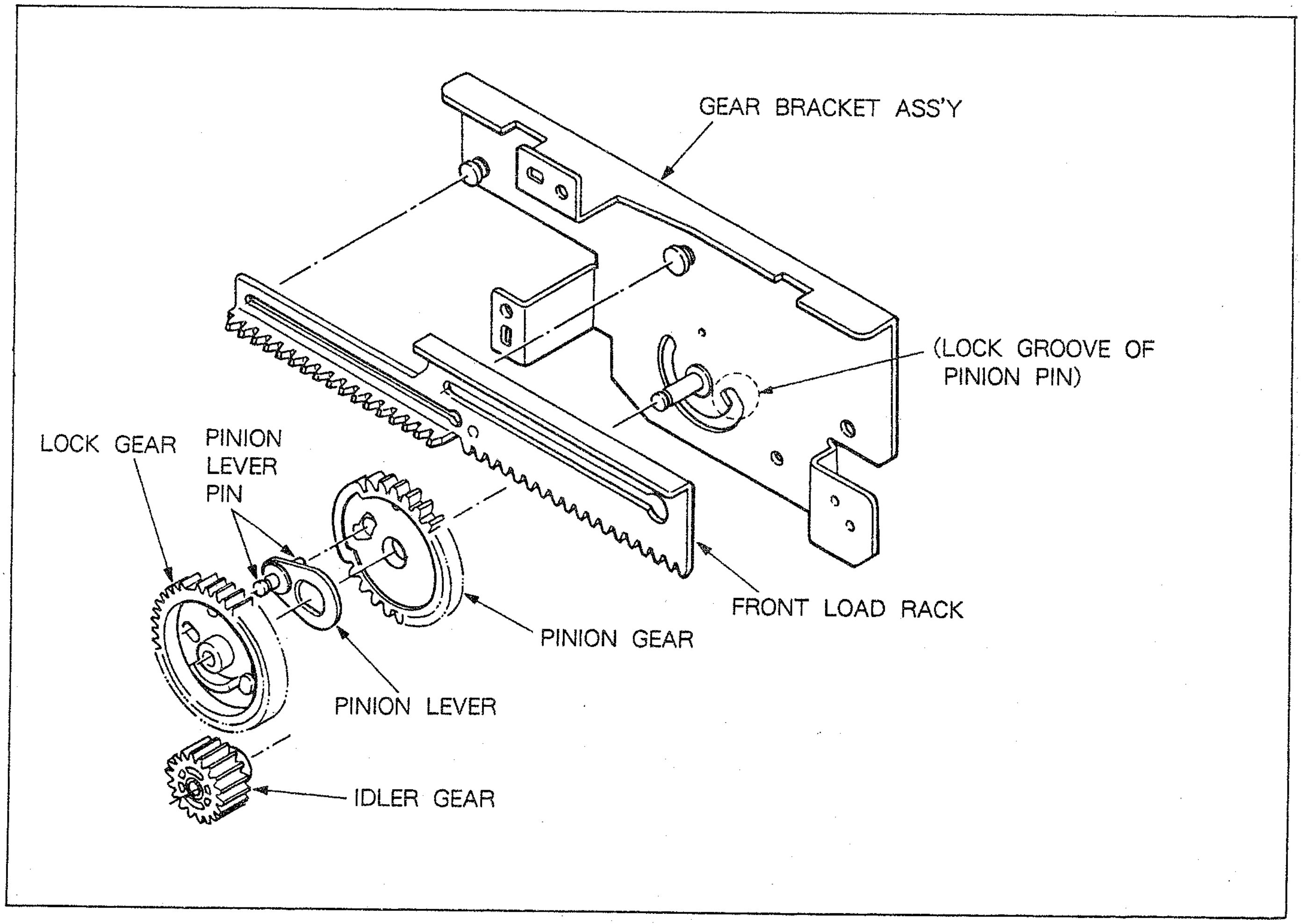


Fig. 2-19 RACK LOADING MECHANISM OF CASSETTE HOLDER

3. MECHANISM CONTROL

3-1. MODE ARRANGEMENT

This mechanism is arranged in such a mode layout as shown in Table. 3-1 and as described in section 2-1. The mode sensing switch described below is used for control of these modes.

3-2. MODE DETECTION SWITCH

For mode detecting one leaf switch (FL START SWITCH and one rotary switch (MECHANISM MODE SWITCH) are used in combination.

Mechanism Mode	Mechanism Mode Switch			HEX DATA	Function	Main Mode Shifting Conditions	VTR Operation Mode
	3	2	1				
EJECT	–	–	–		Eject position		EJECT
					Front loading/Unloading		
SHORT REW	–	–	–		Take up operation in the tape end position		Low side of ⑥. Sensed upon IN
INITIAL	1	1	1	⑦	Power off position		Power off when tape is loaded completely
					Tape unloading position Tape loading Tape loading ending position		
BRAKE	0	0	1	①	Main brake applying position		
STOP / FF/REW	0	1	0	②	STOP waiting and FF/REW (the head motor rotation)		STOP, FF/REW
STILL	0	1	1	③	The positions of STILL, SLOW or F-ADV.		STILL, SLOW, F-ADV
PLAY	1	0	0	④	From FWD direction Normal running mode		PLAY, REC, F-SEARCH
IDLER	1	0	1	⑤	Forward/reverse changeover position		PAUSE
REV	1	1	0	⑥	From REV direction Normal running mode		R-SEARCH

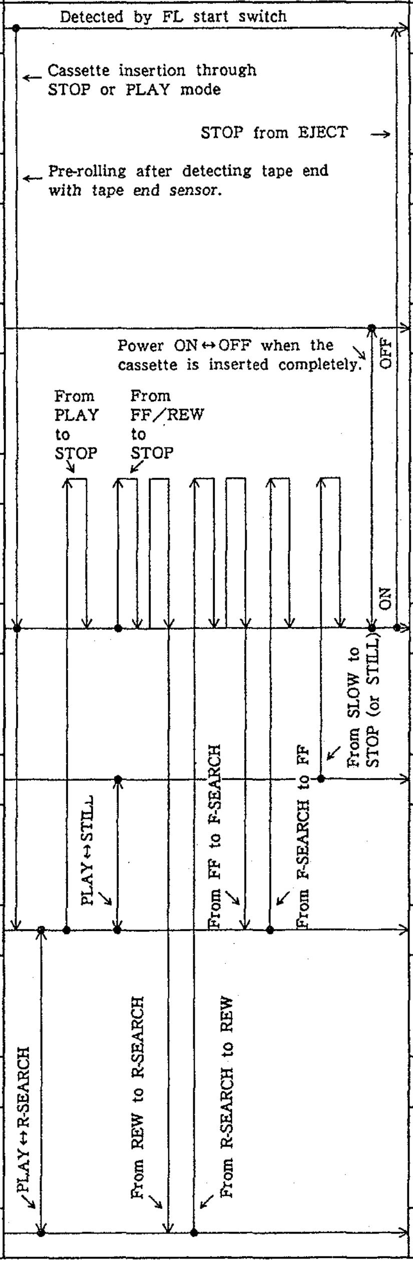

Detected by FL start switch
Cassette insertion through STOP or PLAY mode
STOP from EJECT
Pre-rolling after detecting tape end with tape end sensor.
Power ON↔OFF when the cassette is inserted completely.
OFF
ON
From PLAY to STOP
From FF/REW to STOP
From SLOW to STOP (or STILL)
PLAY↔STILL
From FF to F-SEARCH
From F-SEARCH to FF
PLAY↔R-SEARCH
From REW to R-SEARCH
From R-SEARCH to REW

Table 3-1

(1) Switch component
The mode switch consists of FL START SWITCH for detecting the cassette ejection and insertion, and MECHANISM MODE SWITCH for detecting the each mode position of the mechanism. As can be understood from Fig. 3-1, the MECHANISM MODE SWITCH rotates in excess of 360 degrees. Therefore, the sensing of a signal from the MECHANISM MODE SWITCH is done by the leaf switch.
In the P88 and P89 mechanisms, incidentally, short REW position is detected by the FL END SW, but in the P90 mechanism, the FL END SWITCH is not required due to a change in the internal structure of the MECHANISM MODE SWITCH.

(2) Mechanism mode switch
The mechanism mode switch consists of four terminals, namely, COM, DATA1, DATA2, and DATA3. These are processed as 3-bit signals for discrimination of seven modes.
The MECHANISM MODE SWITCH is not interchangeable with the hither to available black switch due to a change in its internal structure. Be sure therefore to use a blue switch.

3-3. CONSIDERATION TO FULL LOADING

① In the normal stop condition, the head drum is rotated to facilitate the start-up of the image at the time of playback, but it is conceivable that this is left undisturbed for an extended period of time. This may result in wear of the video head. For this reason, when five minutes elapse from the stop condition, the head drum stops rotating.

② To prevent the tape from being caught in the head drum due to dew forming, etc., the tape is housed in the unloaded cassette when turning the power off.

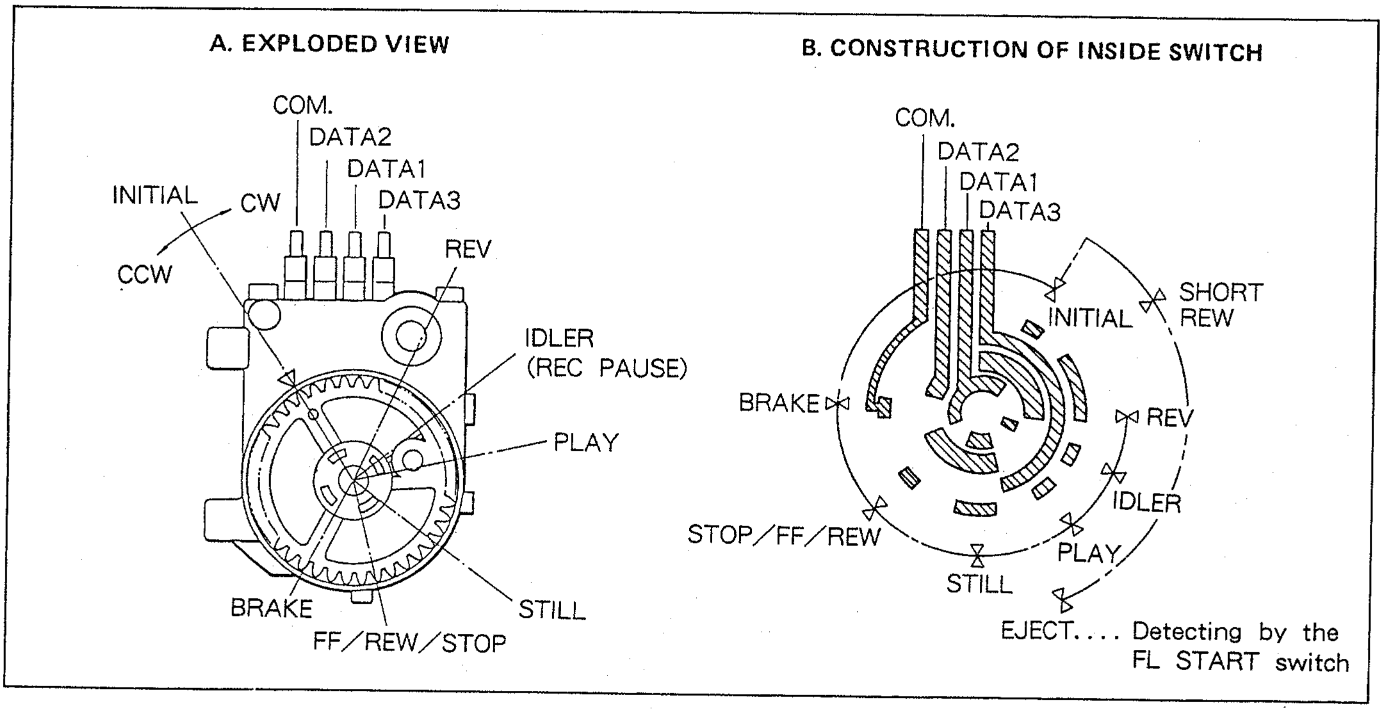

A. EXPLODED VIEW
COM.
DATA2
DATA1
DATA3
INITIAL
CW
CCW
REV
IDLER
(REC PAUSE)
PLAY
BRAKE
FF/REW/STOP
STILL
B. CONSTRUCTION OF INSIDE SWITCH
COM.
DATA2
DATA1
DATA3
INITIAL
SHORT REW
BRAKE
REV
IDLER
STOP/FF/REW
PLAY
STILL
EJECT.... Detecting by the FL START switch

Fig. 3-1 MECHANISM MODE SWITCH (ROTARY SWITCH)

4. MECHANISM MAINTENANCE AND CHECKING

4-1. PERIODIC CHECKING AND MAINTENANCE ITEMS AND SERVICE JIGS

The following maintenance and periodic checking procedures are recommended to ensure proper operation, and to protect the tape from dirt and damage. Also, these procedures should always be followed after repairing the unit.

4-1-1. Periodic Check Items

○ Cleaning ◎ Confirmation △ Lubrication

Part	Usage Time (hours)	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	Remarks
Tape Guide System	Tape running surfaces	○	○	○	○	○	○	○	○	○	○	
	ACE head	○	○	○	○	○	○	○	○	○	○	
	Drum (cylinder)	○	○	○	○	○	○	○	○	○	○	Head life depends heavily on operating conditions.
Drive System	Loading belt	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	Reel drive belt	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	Intermediate gear, pulley axles		△		△		△		△		△	Absolutely avoid oil on tape running surfaces.
	Capstan axles		△		△		△		△		△	
	Loading motor		◎		◎		◎		◎		◎	
Perfor-mance Check	Back tension torque		◎		◎		◎		◎		◎	47 ± 5 gcm
	Brake system		◎		◎		◎		◎		◎	
	FF, REV, PLAY torque		◎		◎		◎		◎		◎	FF : 600 gcm and over REW:750 gcm and over REV : 150 to 240 gcm PLAY : 100 to 160 gcm

Note : The back tension torque is the value that has been measured by the cassette torque meter (VHJ-0016).
The torque of FF, REV, REW, and PLAY represent those measured with them locked by the torque gauge.
FF and REW are values 2 seconds after starting.

4-1-2. Cleaning

① Drum (COMPL CYLINDER) and Video Heads (See Fig. 4-1-1.)

1) Wrap a chamois leather around your finger and moisten it with methyl alcohol.
2) Move the chamois leather to left and right several times on the video head to clean. There is a video head also on the opposite side, so clean it likewise. In Hi-Fi models, clean the audio head also.
3) Clean the tape path surface of the cylinder in the same way.

Note : Always turn power off before cleaning. Do never move the chamois leather vertically or apply too much force to the head ; it may be damaged.

② Cleaning of the Tape Guide System (See Fig. 4-1-2.)

1) Set the EJECT mode and clean the tape guide system (tape guides, impedance roller, FTE head, ACE head, pinch rollers, capstan axles, etc.) with a chamois leather moistened with methyl alcohol.

Note : Make sure that no oil, grease, etc. adhere to the chamois leather and that heads are not damaged.

③ Cleaning of the Drive System

1) Clean the drive system (loading belt, reel drive belt, pulley, supply reel table, etc.) with a soft cloth moistened with methyl alcohol.

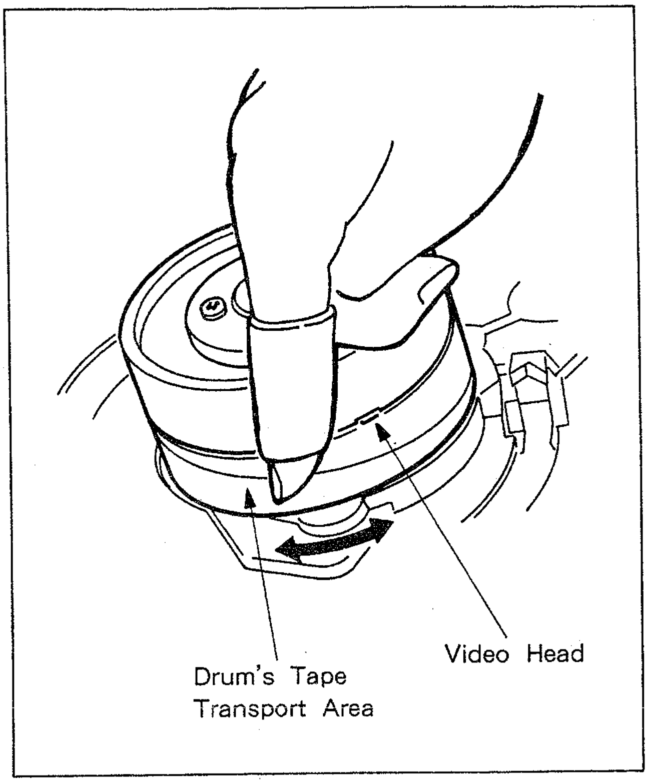

Video Head
Drum's Tape Transport Area

Fig. 4-1-1.

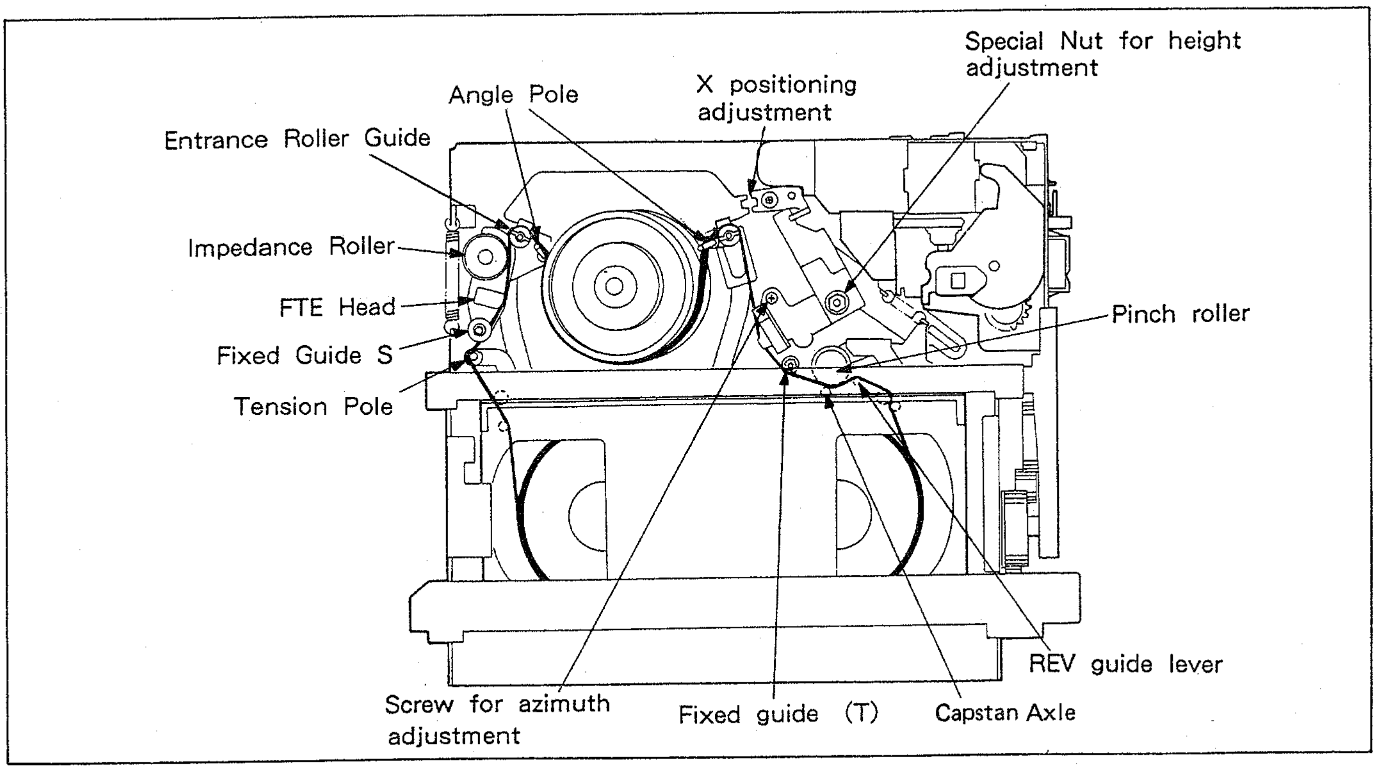
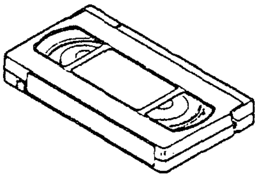

Special Nut for height adjustment
Angle Pole
X positioning adjustment
Entrance Roller Guide
Impedance Roller
FTE Head
Pinch roller
Fixed Guide S
Tension Pole
REV guide lever
Screw for azimuth adjustment
Fixed guide (T)
Capstan Axle

Fig. 4-1-2. Cleaning

4-1-3. Service Jigs

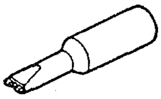
No.	Jig	Jig No.	Remarks
1	Alignment tape	VHJ-0008	SP color bar, 1kHz (normal)
2	Alignment tape	VHJ-0009	SP monoscope, 7kHz (normal)
3	Alignment tape	VHJ-0052	LP monoscope, 3kHz (normal)
4	Eccentric screwdriver	VHJ-0003	For tape path adjustment
5	Nut box	VHJ-0048	For tape path adjustment
6	Torque gauge	VHJ-0004	For reel take-up torque measurement
7	Cassette torquemeter	VHJ-0016	For back tension torque measurement
8	Position adjustment gauge	VHJ-0049	For position adjustment
9	Torque gauge screwdriver	VHJ-0014	For screw fastening torque adjustment
10	3mm dia. bit for torque screwdriver	VHJ-0045	Spare bit for the torque gauge screwdriver
11	Video head removing tool	VHJ-0041	For upper drum removal
12	Cassette stand plate gauge	VHJ-0001	For reel height adjustment
13	Mode selector	VHJ-0050	For mechanism mode selection
14	26-pin flexible flat cable	VHJ-0064	Spare cable for mode selector
15	Mode selector relay board	VHJ-0075	Relay board for mode selector
16	7-wire flat cable	VHJ-0076	Spare cable for relay board
17	REV guide lever removing tool	VHJ-0073	For REV guide lever removal
18	Fixed guide height gauge	VHJ-0053	For fixed guide (S) hight adjustment

VHJ-0008, VHJ-0009, VHJ-0052



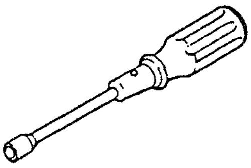
No. 1, 2, 3

VHJ-0003



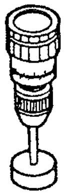
No. 4

VHJ-0048



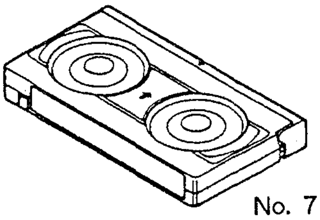
No. 5

VHJ-0004



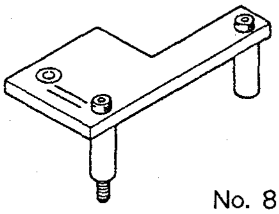
No. 6

VHJ-0016



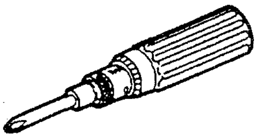
No. 7

VHJ-0049



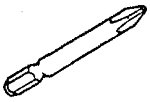
No. 8

VHJ-0014



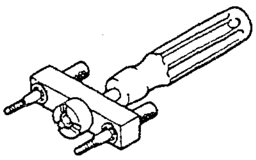
No. 9

VHJ-0045



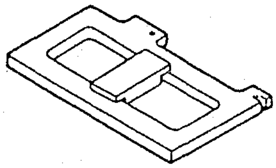
No. 10

VHJ-0041



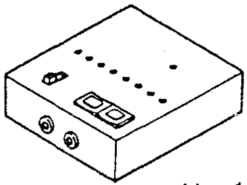
No. 11

VHJ-0001



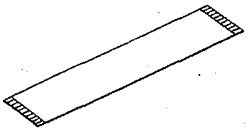
No. 12

VHJ-0050



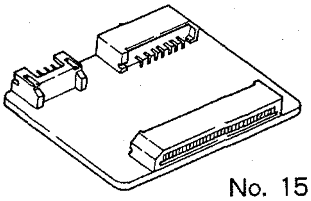
No. 13

VHJ-0064



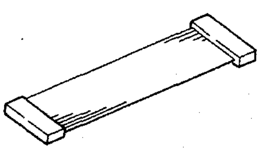
No. 14

VHJ-0075



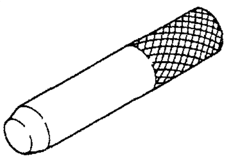
No. 15

VHJ-0076



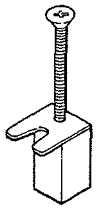
No. 16

VHJ-0073



No. 17

VHJ-0053



No. 18

4-2. MODE SELECTOR (VHJ-0050) HANDLING INSTRUCTIONS

The mode selector drives the loading motor of the P88 mechanism with its internal batteries (UM-2 × 4 = 6V), using LEDS to indicate the mode (EJECT, INITIAL, BRAKE, STOP/REW/FWD, STILL, PLAY, IDLER, REV) simultaneously with EJECT⇔REV mode changes.
Instead of the internal batteries, an external DC 6V power supply can also be used.

4-2-1. Part Names (See Fig. 4-2-1)

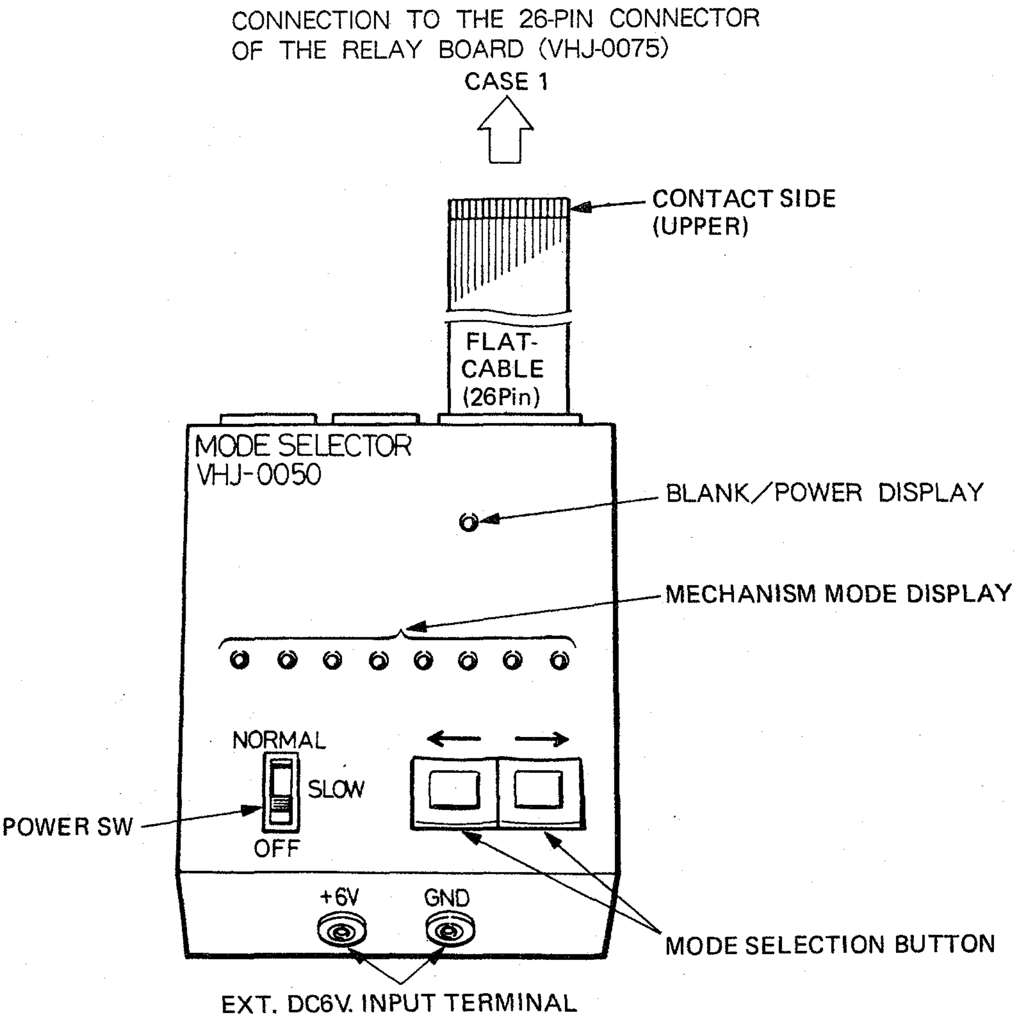

CONNECTION TO THE 26-PIN CONNECTOR
OF THE RELAY BOARD (VHJ-0075)
CASE 1
CONTACT SIDE
(UPPER)
FLAT-
CABLE
(26Pin)
MODE SELECTOR
VHJ-0050
BLANK/POWER DISPLAY
MECHANISM MODE DISPLAY
NORMAL
SLOW
OFF
POWER SW
+6V
GND
MODE SELECTION BUTTON
EXT. DC6V. INPUT TERMINAL

Fig. 4-2-1

4-2-2. Connection Method (See Fig. 4-2-2)

1) Remove the 7-wire cable connected from the system control circuit to the connector (CN822) of the MC-3 board.
2) Connect the 7-wire cable (VHJ-0076) between the connector (CN822) of the MC-3 board and the 7-pin connector of the Mode Selector Connection Board (VHJ-0075).
3) Remove the 6-wire cable extending from the cassette holder section from the connector of the System Control Circuit Board and connect it to the 6-pin connector of the Mode Selector Connection Board (VHJ-0075).
4) Connect a supplied 26-pin flat cable (VHJ-0064) of the mode selector (VHJ-0050) between the mode selector body and the 26-pin connector of the Connection Board (VHJ-0075).

Note : Care should be taken to avoid mistaking the direction of the contacting side when connecting a flexible flat cable.

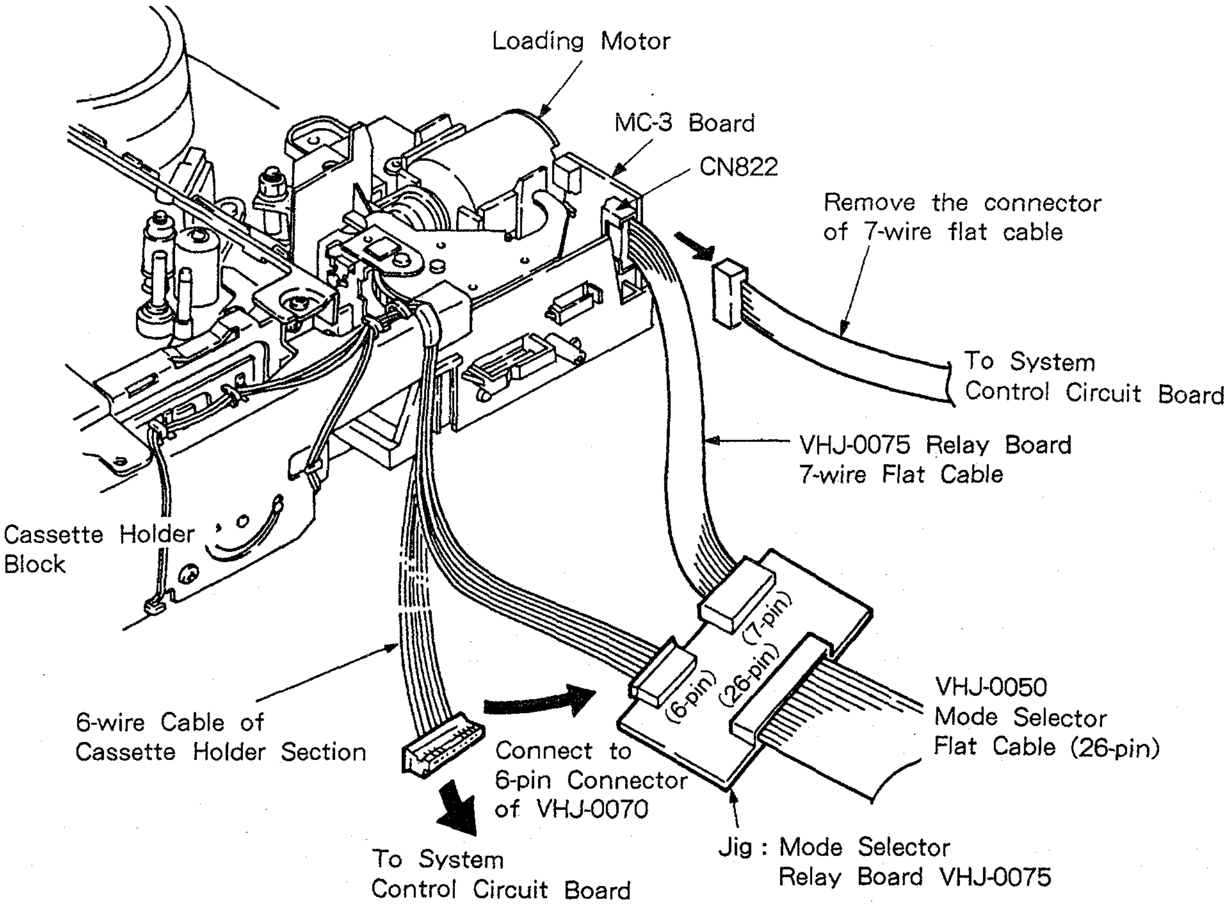

Loading Motor
MC-3 Board
CN822
Remove the connector of 7-wire flat cable
To System Control Circuit Board
VHJ-0075 Relay Board 7-wire Flat Cable
Cassette Holder Block
(7-pin)
(26-pin)
(6-pin)
VHJ-0050 Mode Selector Flat Cable (26-pin)
6-wire Cable of Cassette Holder Section
Connect to 6-pin Connector of VHJ-0070
To System Control Circuit Board
Jig : Mode Selector Relay Board VHJ-0075

Fig. 4-2-2 Connection

4-2-3. Handling Method

1) Keep the right side (⇨) of the mode selector key pressed, and the mode will change in the following sequence : EJECT⇨INITIAL⇨BRAKE⇨STOP/REW/FWD⇨STILL⇨PLAY⇨IDLER⇨REV.
2) When changing the mode in the REV···⇨EJECT direction, press the left side (⇦) of the mode selector key until the desired mode is indicated.
3) In the mid position of each mode during a shift to other mode, the "BLANK" LED lights. But the "PLAY", "IDLER", "REV" LEDs light between the EJECT mode and the INITIAL mode. Be sure therefore to check the mechanism body to see just what state the mechanism is in.
   Incidentally, if the mode selector is not connected to the mechanism, the "BLANK" LED lights to indicate the power ON.
4) The SLOW position of POWER switch makes relatively slow motions in comparison with the NORMAL position.

Note 1 : The mode selector drives the loading motor only, not affecting the head drum motor and the capstan motor. When using the mode selector with a cassette loaded, turn the capstan motor manually to remove tape slackness, preventing tape entanglement.

Note 2 : If the left side (⇦) of the mode selector (VHJ-0050) key is kept pressed with the COMPL cassette mechanism removed, it might get past the EJECT position, causing the front helical gear and the front worm gear to get disengaged.

In this condition, since the front helical gear will not turn even if the right side (⇨) of the mode selector key is pressed, rotate (push) the front helical gear clockwise by hand and engage it with the front worm gear. In this condition, as there is a misalignment between the mechanism main body operation mode (indicated by the mode selector indicator lamps) and the front loading mechanism operation mode, keep the right side (⇨) of the mode selector key pressed until the front helical gear and the front loading gear of the front loading mechanism get back to the initial condition (Refer to A and B in Fig. 4-5-5 of section 4-5-2. Loading Motor).

When the front loading mechanism returns to the initial condition, operation mode of the whole mechanism gets back to normal, matching the mode shown by the mode selector indicator lamps (mode is not properly indicated, however, during EJECT to INITIAL).

Sometimes, engagement of the front helical gear with the front worm gear is delayed, operation mode of the mechanism main body gets too much ahead and the front loading mechanism mode cannot be switched to the initial condition. In that case, press the left side (⇦) of the mode selector key, setting the mechanism main body operation mode back to EJECT (rotation of the mode cam and the MAIN CAM stops).

Note 3 : The mode selector indicator lamps show the mechanism operation mode, but the EJECT lamp may sometimes fail to indicate the actual mechanism operation mode.

5. MECHANISM DISMANTLING AND REASSEMBLING

5-1. MECHANISM MAIN UNIT (See Fig. 5-1-1.)

1. Removal

1) Remove the connectors of the COMPL MC-3 and the COMPL HEAD BRACKET.
2) Remove the flexible cable ① connecting the COMPL CYLINDER to the PRE-AMP UNIT ③ (See Fig. A).
3) Remove the two screws ②, then remove the PRE-AMP UNIT ③.
4) Remove the screw ④, then remove the PRE-AMP. BRACKET ⑤.
5) Remove the two screws ⑥.
6) Remove the three screws ⑦ and two screws ⑩, then lift up the mechanism main unit and remove it.
   Since the TRAY ⑧ obstructs removal of the two front screws ⑩, move the TRAY LOCK LEVER ⑨ in the direction of the arrow to unlock, then slide the TRAY ⑧ before removing the screws. (See Fig. B)

Note : Shape of the PRE-AMP UNIT ③ and the PRE-AMP. BRACKET ⑤ differ depending on the model.

2. Remounting

1) Mount the mechanism main unit onto the chassis with the three screws ⑦ and two screws ⑩.
2) Tighten the two screws ⑥.
3) Mount the PRE-AMP. BRACKET ⑤ with the two screws ④.
4) Mount the PRE-AMP UNIT ③ and the ground lug with the two screws ② (some models are not provided with a ground lug).
5) Insert the flexible cable ① into the connector of the PRE-AMP UNIT.
6) Connect the connectors of COMPL MC-3 and COMPL HEAD BRACKET.

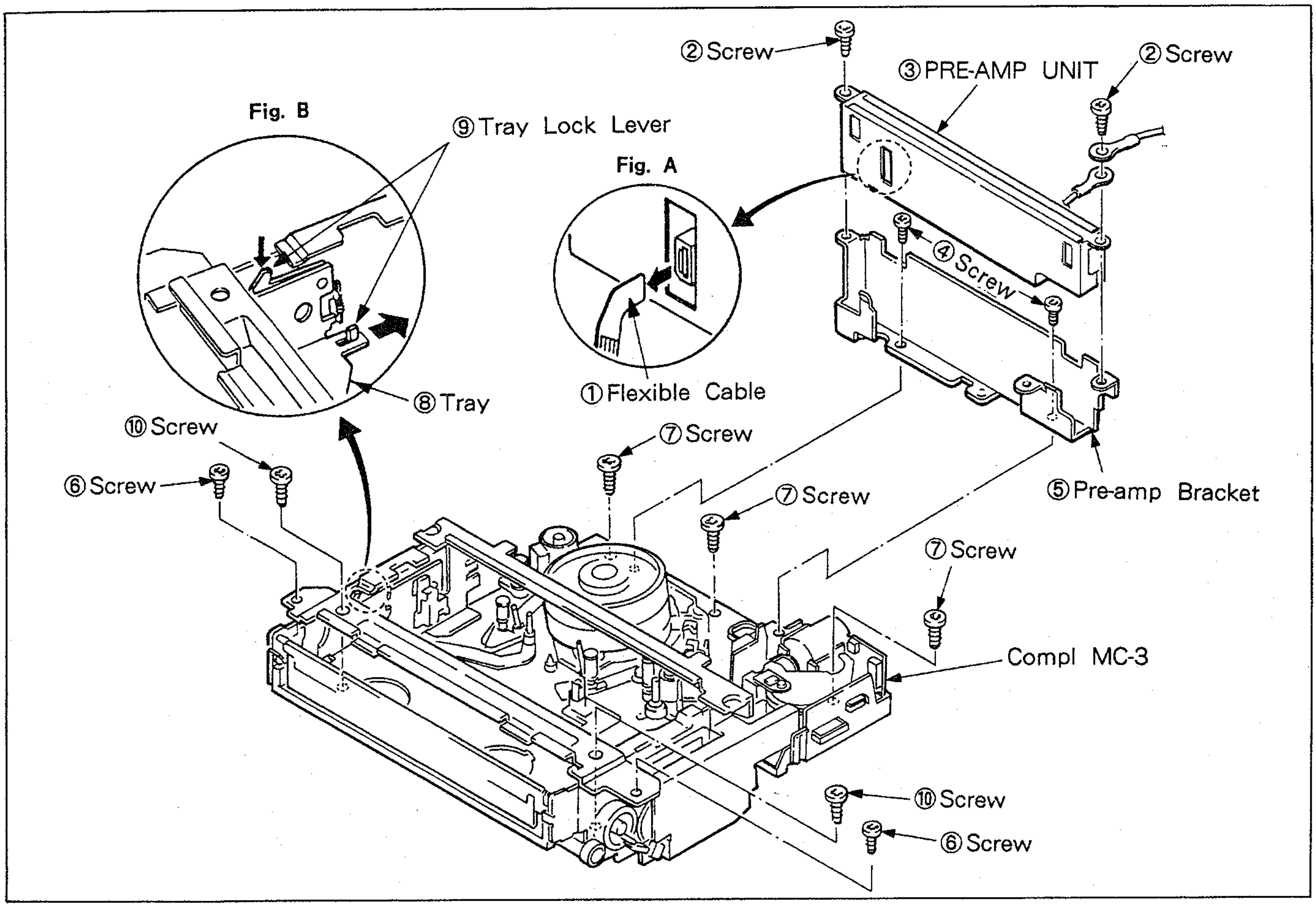

②Screw
③PRE-AMP UNIT
②Screw
Fig. B
⑨Tray Lock Lever
Fig. A
④Screw
①Flexible Cable
⑧Tray
⑩Screw
⑦Screw
⑥Screw
⑦Screw
⑤Pre-amp Bracket
⑦Screw
Compl MC-3
⑩Screw
⑥Screw

Fig. 5-1-1 Mecahnism Main Unit

5-2. CASSETTE HOLDER MECHANISM

5-2-1. COMPL Cassette Mechanism (See Fig. 5-2-1.)

1. Removal

1) Set the video main unit to the EJECT completed mode.
2) Pull out the connectors (6-PIN CONNECTOR connected to the system control circuit board, ACE HEAD CONNECTOR, and FTE HEAD CONNECTOR) from CASSETTE HOLDER.
3) Remove the two screws ①.
4) Remove the two screws ②.
5) Lift up the COMPL CASSETTE MECHANISM ④ back a little and remove the two hooks ③ on the front (See Fig. B). When doing so, make sure that the SAFETY SWITCH LEVER is not caught by the mechanism chassis.

2. Remounting

1) Set the chassis section mechanism to the EJECT mode with the mode selector (VHJ-0050) (looking from above, match the front loading gear hole ⑤ with the MOTOR HOLDER hole ⑥ as shown in Fig. A).
2) Set the COMPL CASSETTE MECHANISM ④ to the EJECT completed mode.
3) Mount the COMPL CASSETTE MECHANISM ④ onto the mechanism chassis, aligning it with the protuberance.
   Match positions of the FRONT LOADING GEAR △ mark ⑦ and the RACK EJECT mark ⑧. (See Fig. A.)
4) Fix to the mechanism chassis with the two screws ②.
5) Fix to the chassis with the screw ①.
6) Connect to the various connectors.

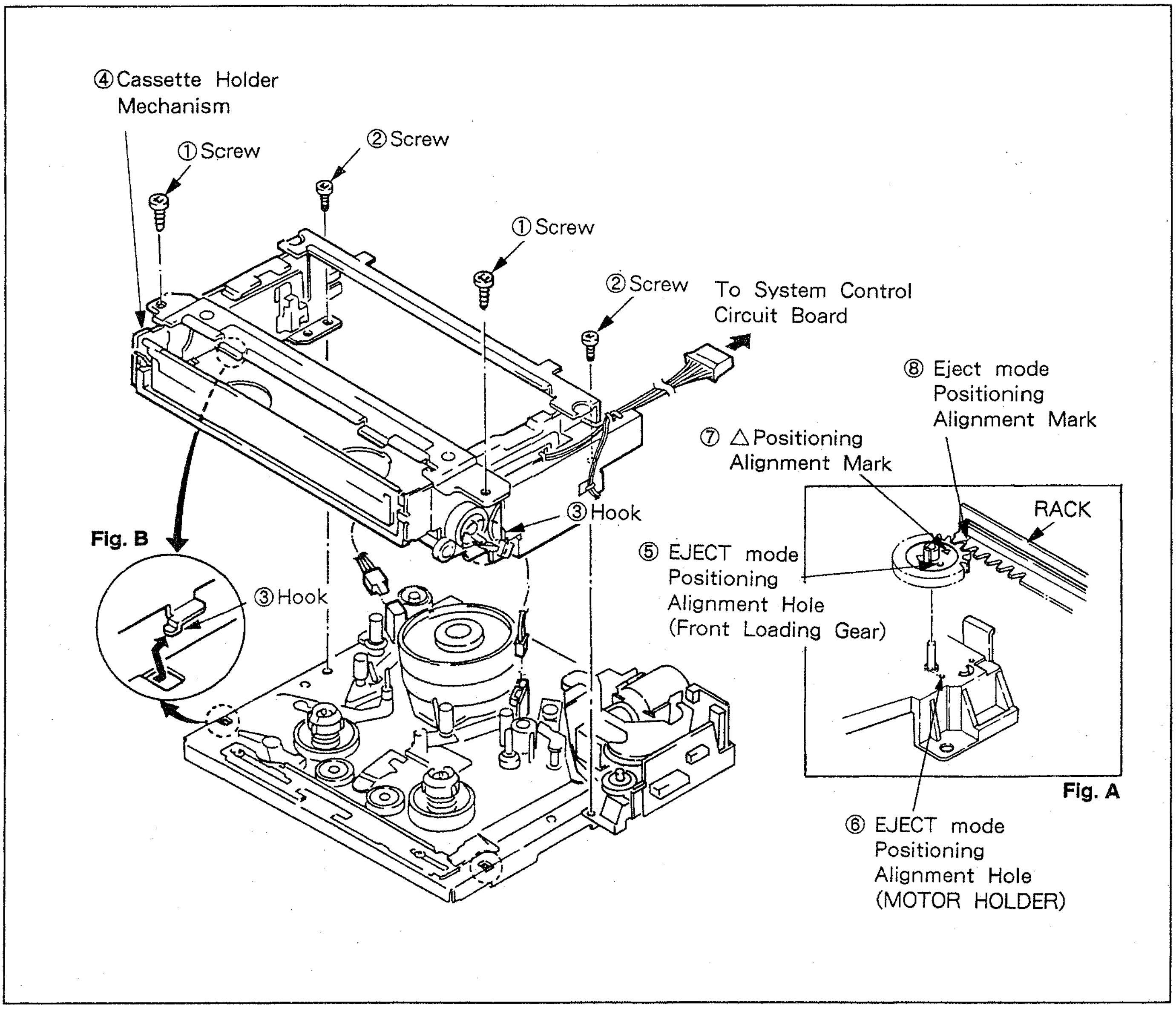

④Cassette Holder Mechanism
①Screw
②Screw
①Screw
②Screw
To System Control Circuit Board
⑧ Eject mode Positioning Alignment Mark
⑦ △Positioning Alignment Mark
RACK
③Hook
⑤ EJECT mode Positioning Alignment Hole (Front Loading Gear)
Fig. B
③Hook
Fig. A
⑥ EJECT mode Positioning Alignment Hole (MOTOR HOLDER)

Fig. 5-2-1 Compl Cassette Mechanism

5-2-2. Gear Bracket Ass'y (See Fig. 5-2-2.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the four screws ①, then remove the GEAR BRACKET ASS'Y ②.
3) Remove the E ring ③, then remove the LOCK GEAR ④, the PINION LEVER ASS'Y ⑤, the PINION GEAR ⑥ and the RACK ⑦, in that order.

2. Remounting

1) Apply grease to the shaft ⑧ and the two pins ⑨ of the GEAR BRACKET ASS'Y.
2) Apply grease to the pin ⑩ of the PINION LEVER ASS'Y.
3) Apply grease to the toothed part of the RACK ⑦.
4) Fit the RACK ⑦ onto the two pins ⑨. Match position of the hole ⑪ to the GEAR BRACKET hole ⑫.
5) Mount the PINION GEAR ⑥, PINION LEVER ASS'Y ⑤, and LOCK GEAR ④ in the shaft ⑧ in the order mentioned.
   Set the hole ⑬ of the PINION GEAR and the LOCK GEAR with the hole ⑪ of the RACK for proper positioning at that time.
6) Mount them in E-ring shaft.
7) Set the GEAR BRACKET ASS'Y ② to the dowel and mount it using four screws ①.
   Set the hole Ⓐ of the IDLER GEAR with the hole Ⓑ of the SIDE BOARD as shown in Fig. 5-2-3 at this time.
   Also set the hole ⑬ of the PINION GEAR and the LOCK GEAR with the hole ⑫ of the GEAR BRACKET by referring to Fig. 5-2-2. After mounting them, check to be sure that FL START SWITCH ⑭ is in the ON state shown in Fig. A.
8) Remount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

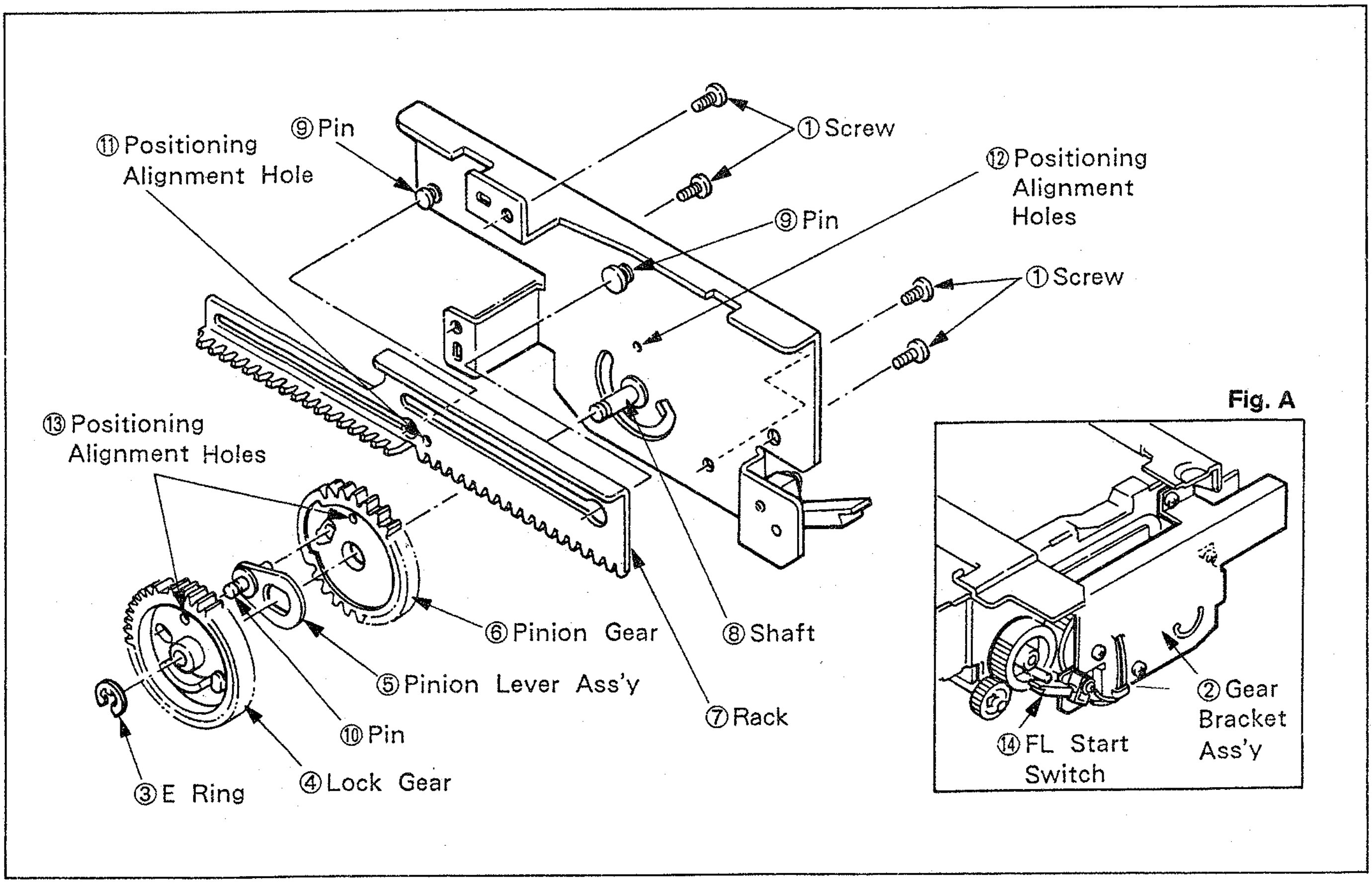

⑪Positioning Alignment Hole
⑨Pin
①Screw
⑫Positioning Alignment Holes
⑨Pin
①Screw
⑬Positioning Alignment Holes
⑥Pinion Gear
⑧Shaft
⑤Pinion Lever Ass'y
⑦Rack
⑩Pin
③E Ring
④Lock Gear
Fig. A
②Gear Bracket Ass'y
⑭FL Start Switch

Fig. 5-2-2. Gear Bracket Ass'y

5-2-3. Cassette Drive Gear (Right) (See Fig. 5-2-3.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM and the GEAR BRACKET ASS'Y as instructed in 5-2-1. and 5-2-2., respectively.
2) Remove the IDLER GEAR ①.
3) Remove the SPRING COIL ②, then remove the MAIN GEAR ③.
4) Remove the E ring ④, then remove the LEVER GEAR ASS'Y R ⑤.
5) Open the hook ⑥ and remove the COUPLE GEAR R ⑦. Take care not to open the hook ⑥ too much, otherwise it may get deformed or broken. If it does, replace it.
6) Remove the IDLER GEAR R ⑧.

2. Remounting

1) Apply grease to gear parts that undergo friction.
2) Mount the IDLER GEAR R ⑧ onto the axle ⑨.
3) Mount the COUPLE GEAR R ⑦ onto the ROD ASS'Y axle ⑩. When doing so, match the couple gear position with the IDLER GEAR R ⑧ as shown in Fig. A.
4) Mount the LEVER GEAR ASS'Y R ⑤ onto the axles ⑪ and ⑫. Match position to the IDLER GEAR R ⑧ as shown in Fig. A.
5) Mount the E ring ④ onto the axle ⑫.
6) Mount the MAIN GEAR ③ onto the axle ⑪. When doing so, match position to the IDLER GEAR R ⑧ as shown in Fig. A.
7) Hook the SPRING COIL ② to the notch ⑬ in the MAIN GEAR R ③ and the LEVER GEAR ASS'Y R.
8) Mount the IDLER GEAR ① onto the axle ⑭. When doing so, match position to the MAIN GEAR as shown in Fig. A.
9) Mount the GEAR BRACKET ASS'Y and the COMPL CASSETTE MECHANISM ASS'Y as instructed in 5-2-2. and 5-2-1., respectively.

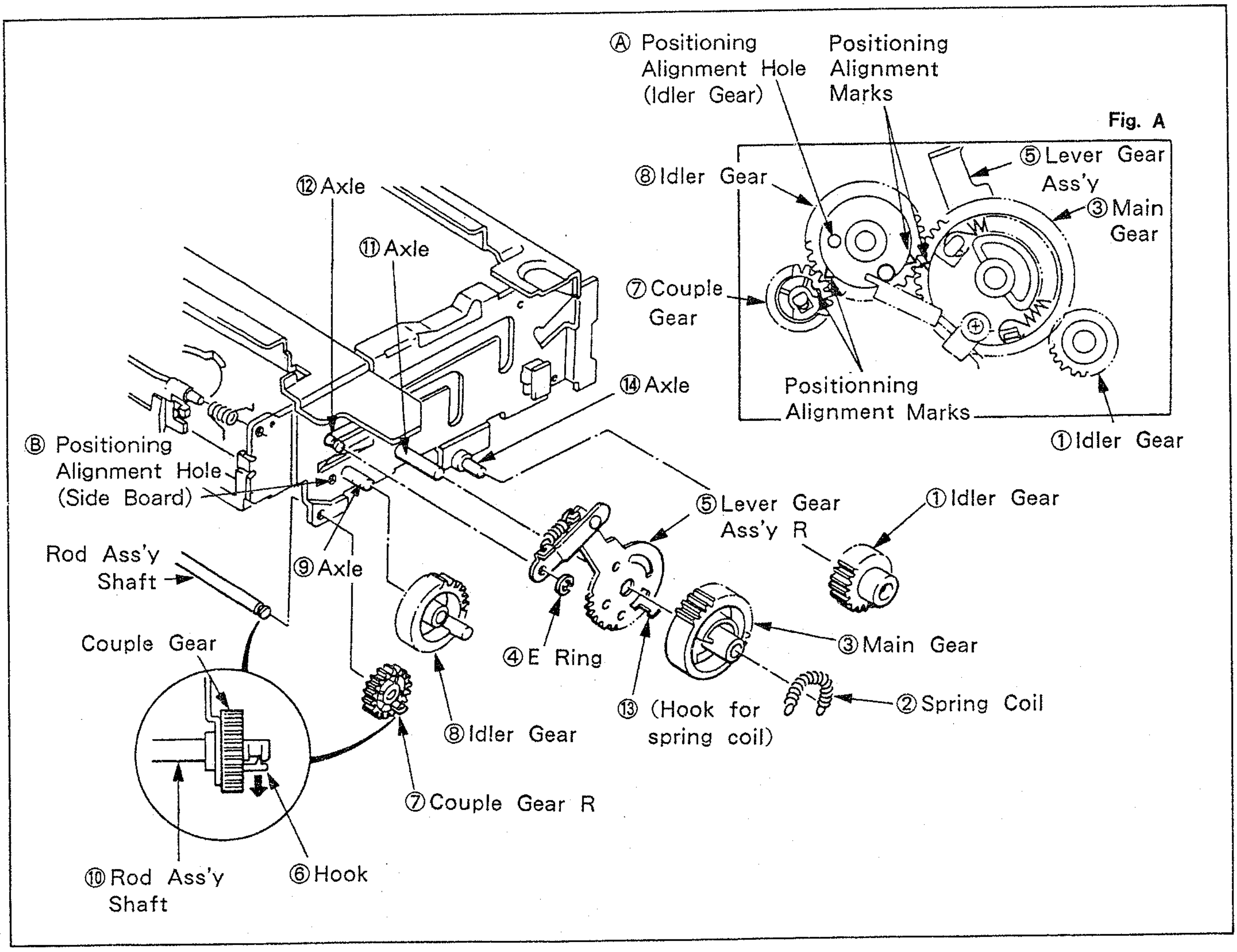

Ⓐ Positioning Alignment Hole (Idler Gear)
Positioning Alignment Marks
Fig. A
⑧ Idler Gear
⑤ Lever Gear Ass'y
③ Main Gear
⑦ Couple Gear
⑭ Axle
Positionning Alignment Marks
① Idler Gear
⑫ Axle
⑪ Axle
Ⓑ Positioning Alignment Hole (Side Board)
Rod Ass'y Shaft
⑨ Axle
Couple Gear
⑤ Lever Gear Ass'y R
① Idler Gear
④ E Ring
③ Main Gear
⑬ (Hook for spring coil)
② Spring Coil
⑧ Idler Gear
⑦ Couple Gear R
⑩ Rod Ass'y Shaft
⑥ Hook

Fig. 5-2-3. Cassette Drive Gears (Right Side)

5-2-4. Cassette Drive Gear (Left) (See Fig. 5-2-4)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the COUPLE GEAR R as instructed in 5-2-3.
3) Remove the ROD ASS'Y ①.
4) Remove the E ring ②.
5) Remove the hook ③, then remove the LEVER GEAR ASS'Y L ④. Take care not to open the hook ③ too much, otherwise it may get deformed or broken. If it does, replace it.
6) Remove the SPRING COIL ⑤ from the LEVER GEAR ASS'Y ④.
7) Remove the IDLER GEAR L ⑥ and the DOOR OPEN LEVER ⑦.

2. Remounting

1) Apply grease to the axles ⑧, ⑨ and ⑩.
2) Apply grease to the IDLER GEAR L ⑥.
3) Mount the DOOR OPEN LEVER ⑦ onto the axle ⑧. Do it so that the end of the DOOR OPEN LEVER ⑦ leans against the front side of the CASSETTE DOOR ⑪ as shown in Fig. A.
4) Mount the IDLER GEAR L ⑥ onto the axle ⑧.
5) Pass the ROD ASS'Y ① through the hole ⑫. Match position of the COUPLE GEAR L ⑬ and the IDLER GEAR L ⑥ as shown in Fig B.
6) Mount the COUPLE GEAR R as instructed in 5-2-3.
7) Hook the SPRING COIL ⑤ to the LEVER GEAR ASS'Y L ④.
8) Mount the LEVER GEAR ASS'Y L ④ onto the axle ⑨ and the shaft ⑩. Match position to the IDLER GEAR L ⑥ as shown in Fig. B.
9) Mount the COMPL CASSETTE MECHANISM onto the chassis as instructed in 5-2-1.

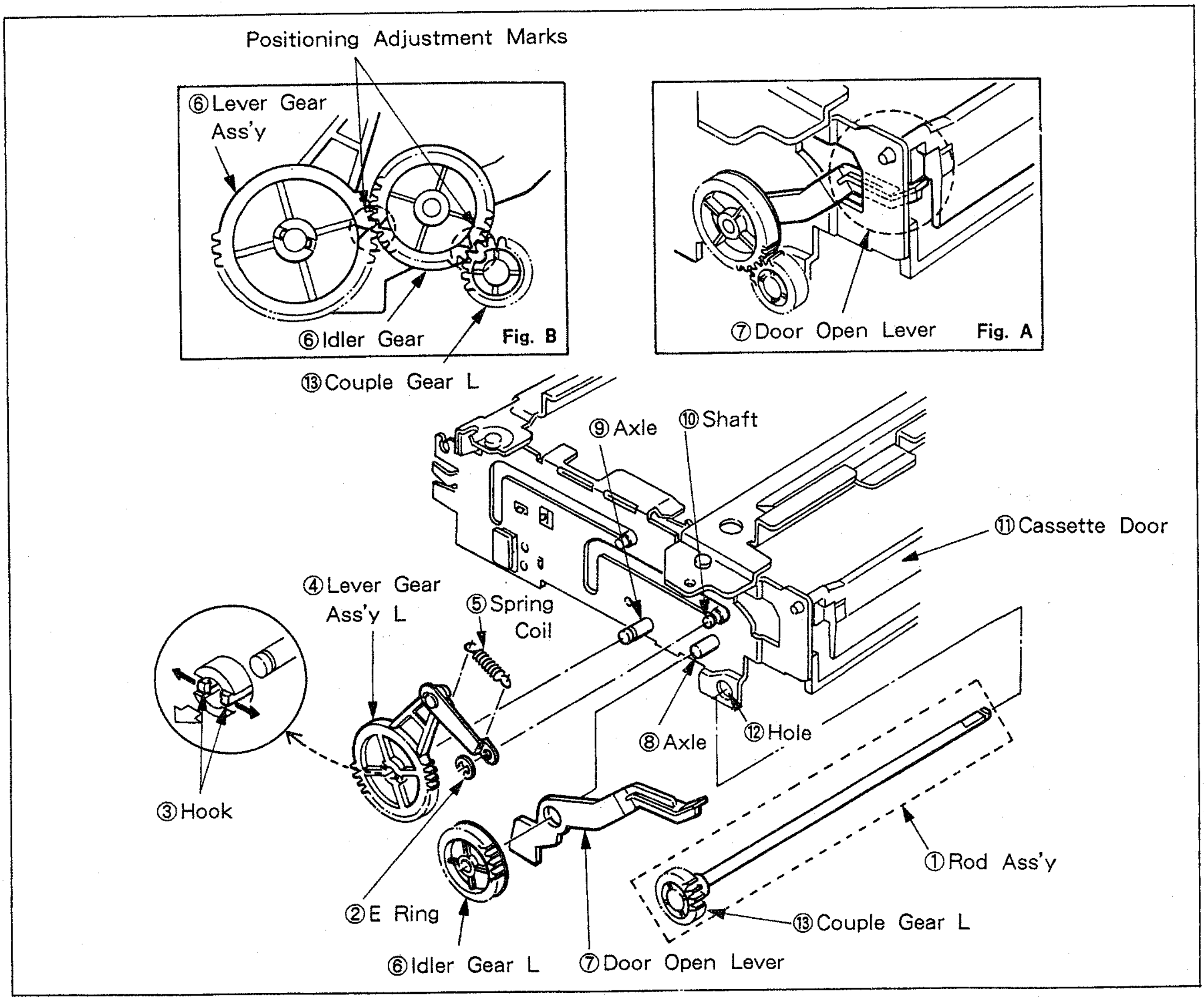

Positioning Adjustment Marks
⑥Lever Gear Ass'y
⑥Idler Gear
Fig. B
⑦Door Open Lever
Fig. A
⑬Couple Gear L
⑨Axle
⑩Shaft
⑪Cassette Door
④Lever Gear Ass'y L
⑤Spring Coil
③Hook
⑧Axle
⑫Hole
①Rod Ass'y
②E Ring
⑬Couple Gear L
⑥Idler Gear L
⑦Door Open Lever

Fig. 5-2-4. Cassette Drive Gears (Left Side)

5-2-5. FL Start Switch (See Fig. 5-2-5.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the screw ①.
3) Remove the lead wire of the FL START SWITCH ②.

2. Remounting

1) Solder the lead wire to the FL START SWITCH ② terminal.
2) Align the FL START SWITCH ② protuberance to the hole ⑤, then mount it onto the GEAR BRACKET ASS'Y ③ with the screw ①. Do it so that the FL START SWITCH ② is turned ON by holding the pin ④ of IDLER GEAR in the EJECT completed mode.
3) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

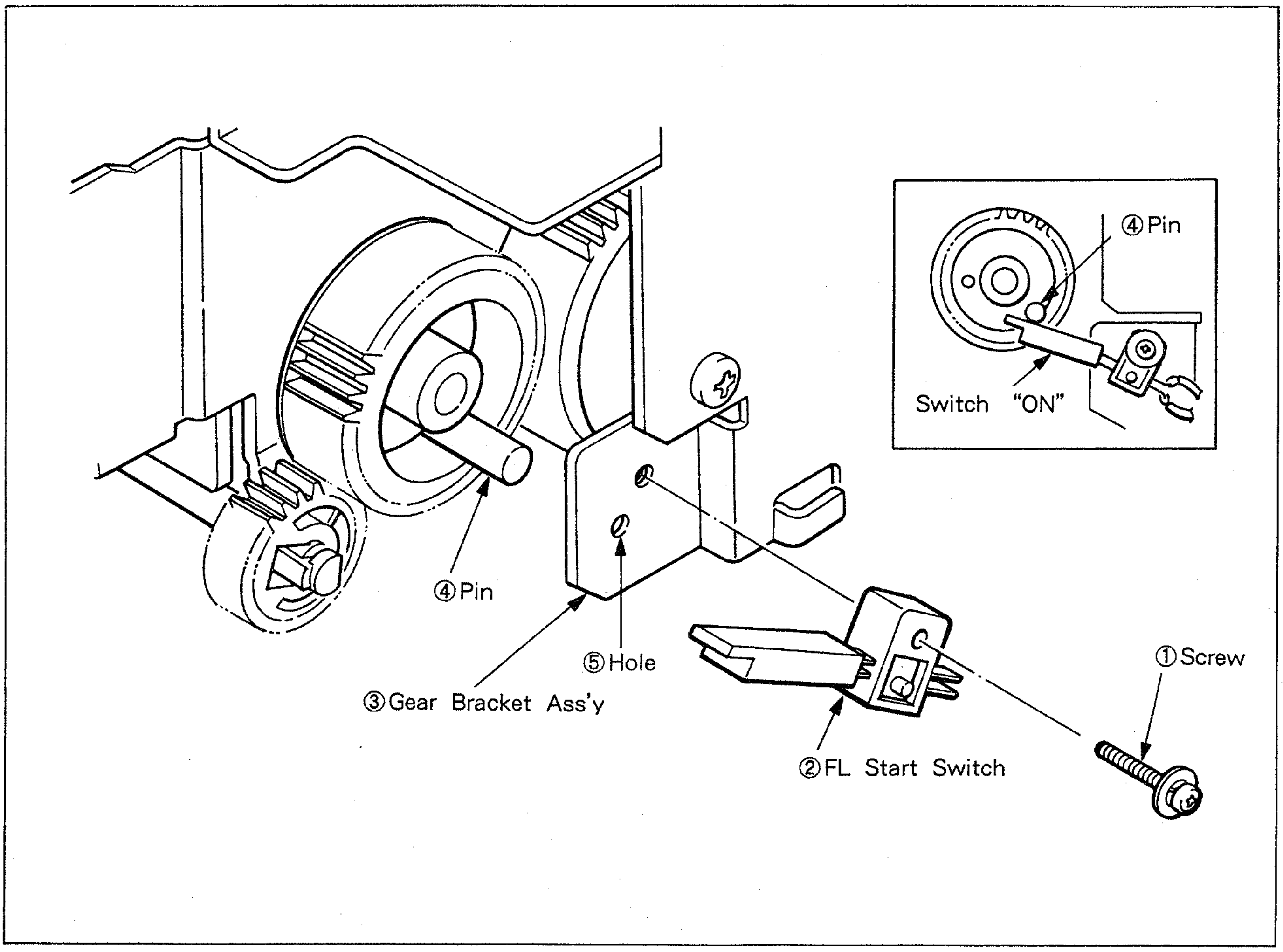

④Pin
Switch "ON"
④Pin
⑤Hole
③Gear Bracket Ass'y
①Screw
②FL Start Switch

Fig. 5-2-5. FL Start Switch

5-2-6. T-Top Sensor, T-End Sensor (See Fig. 5-2-6.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) When removing the T-TOP SENSOR, remove the GEAR BRACKET ASS'Y as instructed in 5-2-2.
3) Unhook the hook ① as instructed in Fig. A, then remove the LID ②. Take care not to push the hook ① too much, otherwise it may be deformed or broken.
4) Remove the phototransistors ③, then remove the lead wire.

Note : Mounting position of the transistor holder on the T-END SENSOR side is precisely adjusted at the factory, so do never remove it from the COMPL CASSETTE MECHANISM.

2. Remounting

1) Solder the brown lead wire to the emitter side, and the red lead wire to the collector side of the T-TOP SENSOR phototransistor ③.
   Solder the orange lead wire to the emitter side, and the yellow lead wire to the collector side of the T-END SENSOR phototransistor.
2) Mount the phototransistors ③ onto their respective holders.
3) Mount the LID ② and fix it with the hook ①.
4) Mount the GEAR BRACKET ASS'Y as instructed in 5-2-2.
5) Mount the COMPL CASSETTE MECHANISM as insturcted in 5-2-1.

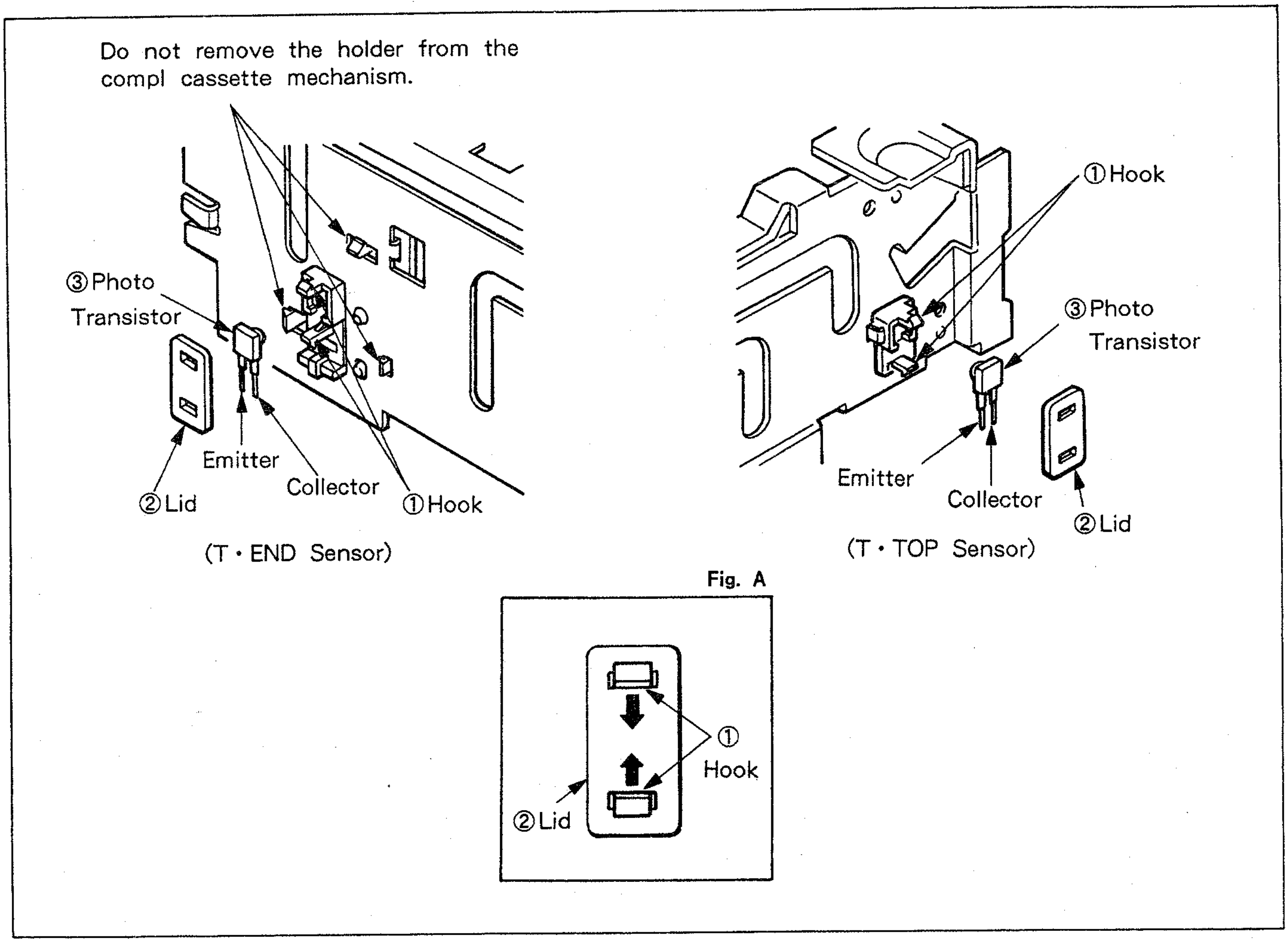

Do not remove the holder from the compl cassette mechanism.
③Photo Transistor
Emitter
Collector
②Lid
①Hook
(T • END Sensor)
①Hook
③Photo Transistor
Emitter
Collector
②Lid
(T • TOP Sensor)
Fig. A
①
Hook
②Lid

Fig. 5-2-6. T TOP Sensor & T END Sensor

5-3. COMPL HOLDER MOTOR (LOADING MOTOR BLOCK)

5-3-1. COMPL Motor Bracket

1. Removal

1) Remove the PRE-AMP UNIT and the PRE-AMP. BRACKET as instructed in 5-1.
2) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
3) Remove the two screws ① and the other one ⑩, then remove the COMPL HOLDER MOTOR ② (see Fig. 5-3-1.).

2. Remounting

1) Set the mechanism chassis to the INITIAL mode. In this mode, look at the mechanism chassis positioning holes ③ just from above and align the MAIN CAM ④ and MODE CAM ⑤ positioning holes as shown in Fig. A.
2) Set the COMPL HOLDER MOTOR ② to the INITIAIL mode with the mode selector (VHJ-0050). In this position, the FRONT LOADING GEAR △ mark ⑥ is aligned with the MOTOR HOLDER INITIAL mode position mark ⑦ (see Fig. B.).
3) Align the ROTARY SWITCH (mode detector switch) ⑧ with the INITIAL mode position mark ⑨ (see Fig. C.).
4) Align the COMPL HOLDER MOTOR main unit ② with the protuberance ⑪, then mount it with the two screws ① and the other one ⑩.
5) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
6) Mount the PRE-AMP UNIT and the PRE-AMP. BRACKET as instructed in 5-1.

Note : Normal mechanism operation cannot be achieved if initial positioning of the MAIN CAM ④, the MODE CAM ⑤ and the ROTARY SWITCH (mode detector switch) ⑧ are not performed precisely.

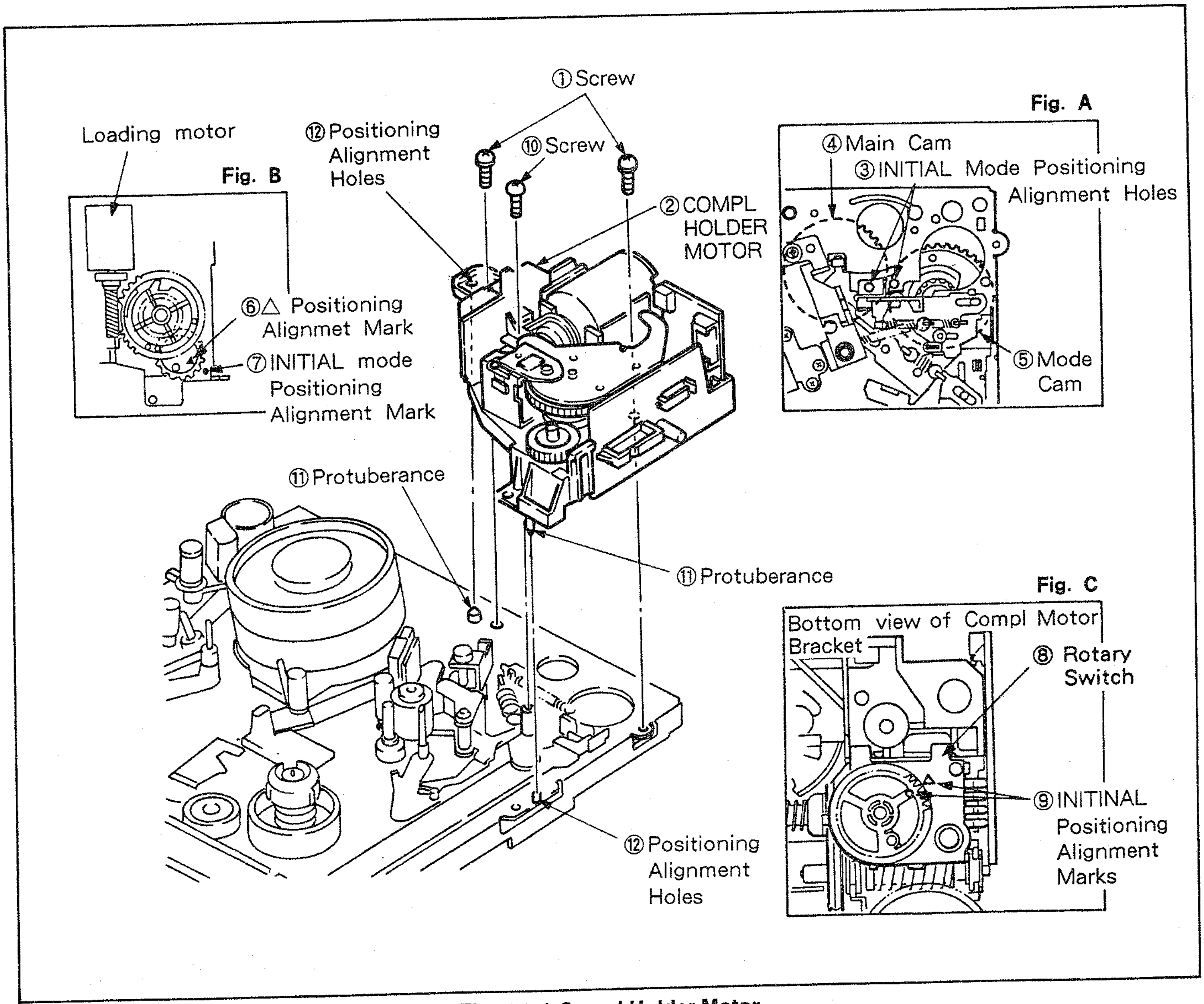

①Screw
Fig. A
Loading motor
⑫Positioning Alignment Holes
⑩Screw
Fig. B
④Main Cam
③INITIAL Mode Positioning Alignment Holes
②COMPL HOLDER MOTOR
⑥△ Positioning Alignmet Mark
⑦INITIAL mode Positioning Alignment Mark
⑤Mode Cam
⑪Protuberance
⑪Protuberance
Fig. C
Bottom view of Compl Motor Bracket
⑧ Rotary Switch
⑨INITINAL Positioning Alignment Marks
⑫Positioning Alignment Holes

Fig. 5-3-1 Compl Holder Motor

5-3-2. Loading Motor (Refer to Fig. 5-3-2.)

1. Removal

LOADING MOTOR can be replaced after LOADING MOTOR BLOCK unit has been removed by referring to 5-3-1. The 1990 version of the mechanism allows LOADING MOTOR itself to be replaced without removing CASSETTE HOLDER BLOCK and LOADING MOTOR BLOCK. The following describes this procedure.

1) Use MODE SELECTOR (VHJ-0050) to set the mechanism to the initial mode.
2) Remove the connector for DEW SENSOR connected to the MC-3 board ①.
3) Remove three screws ② and remove HOLDER BRACKET ④ with FRONT WORM ASS'Y ③ still attached.
4) Remove DAMPER ⑥ attached to the pulley of LOADING MOTOR ⑤.
5) Remove FRONT HELICAL GEAR ⑦ and WASHER ⑧.
6) Remove soldered LEAD WIRE from the terminal of LOADING MOTOR ⑤.
7) Remove LOADING BELT ⑨.
8) Remove LOADING MOTOR ⑤ by lifting up from the back terminal side.

2. Remounting

Before attaching LOADING MOTOR ⑤ to MOTOR BRACKET ASS'Y ⑩, confirm DAMPER ⑪ and DAMPER ⑫ shown in Fig. 5-3-5. are in the proper position on MOTOR BRACKET ASS'Y ⑩.

1) LOADING MOTOR ⑤ puts REAR SIDE BOSS ㉓ in the slit ㉔ of MOTOR HOLDER ⑩.
   Further, mount the tap hole ⑬ at two points of the front pulley side so that the it is secured to the PROTUBERANCE ⑭ of the MOTOR HOLDER at two points.
2) Solder the lead wire from the MC-3 board to LOADING MOTOR ⑤ terminal. (Solder the red lead wire to the positive terminal side.)
3) Hang LOADING BELT ⑨ on the pulley.
4) After hanging BELT ⑨ on the pulley, confirm that the mechanism unit is in the initial mode. The initial mode is indicated by Fig. A of Fig. 5-3-2., and is the position in which INITIAL POSITIONING ALIGNMENT HOLEs of MAIN CAM ⑮ and MODE CAM ⑯ are lined up with THROUGH HOLE ⑰ of MOTOR HOLDER. If the initial mode is not selected, adjust with MODE SELECTOR (VHJ-0050).
5) As shown in Fig. B, confirm the positions of the △ POSITIONING ALIGNMENT MARK on FRONT LOAD GEAR ⑱ and INITIAL MARK ⑲ position of MOTOR HOLDER and the position relationship of CASSETTE HOLDER RACK ⑳.
6) Apply a light coat of grease to the entire sides of AXLE ㉑ and FRONT HELICAL GEAR ⑦.
7) Attach FRONT HELICAL GEAR ⑦ and WASHER ⑧ to AXLE ㉑. As shown in Fig. C, FRONT HELICAL GEAR ⑦ is attached so that the indent on the side is inside PIN ㉒ of FRONT LEVER ASS'Y.
8) Attach DAMPER ⑥ to LOADING MOTOR ⑤ pulley.
9) HOLDER BRACKET ④ is attached by engaging FRONT WORM ASS'Y ③ with LOADING MOTOR ⑤ pulley, and held in place with three screws ②.
10) Attach the connector of DEW SENSOR ㉕ to the MC-3 board ① and return the mechanism to the eject completion using MODE SELECTOR.

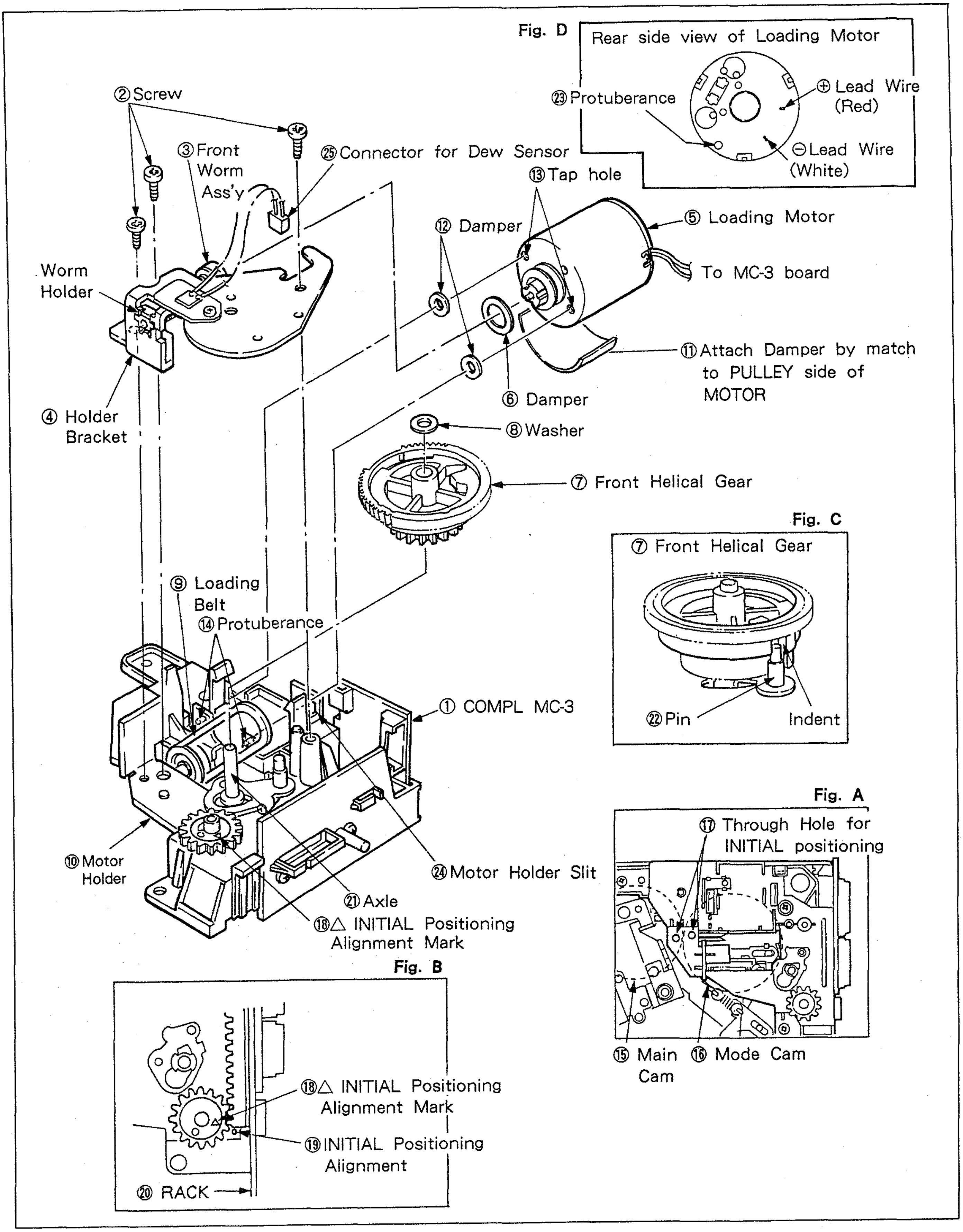


Fig. D
Rear side view of Loading Motor
㉓ Protuberance
⊕ Lead Wire (Red)
⊖ Lead Wire (White)
② Screw
③ Front Worm Ass'y
㉕ Connector for Dew Sensor
⑬ Tap hole
⑫ Damper
⑤ Loading Motor
To MC-3 board
Worm Holder
④ Holder Bracket
⑪ Attach Damper by match to PULLEY side of MOTOR
⑥ Damper
⑧ Washer
⑦ Front Helical Gear
Fig. C
⑦ Front Helical Gear
㉒ Pin
Indent
⑨ Loading Belt
⑭ Protuberance
① COMPL MC-3
⑩ Motor Holder
㉔ Motor Holder Slit
㉑ Axle
⑱△ INITIAL Positioning Alignment Mark
Fig. A
⑰ Through Hole for INITIAL positioning
⑮ Main Cam
⑯ Mode Cam
Fig. B
⑱△ INITIAL Positioning Alignment Mark
⑲ INITIAL Positioning Alignment
⑳ RACK

Fig. 5-3-2. Loading Motor

5-4. TAPE LOADING MECHANISM

5-4-1. Main Parts of the Tape Loading Mechanism (See Fig. 5-4-1.)

1. Removal

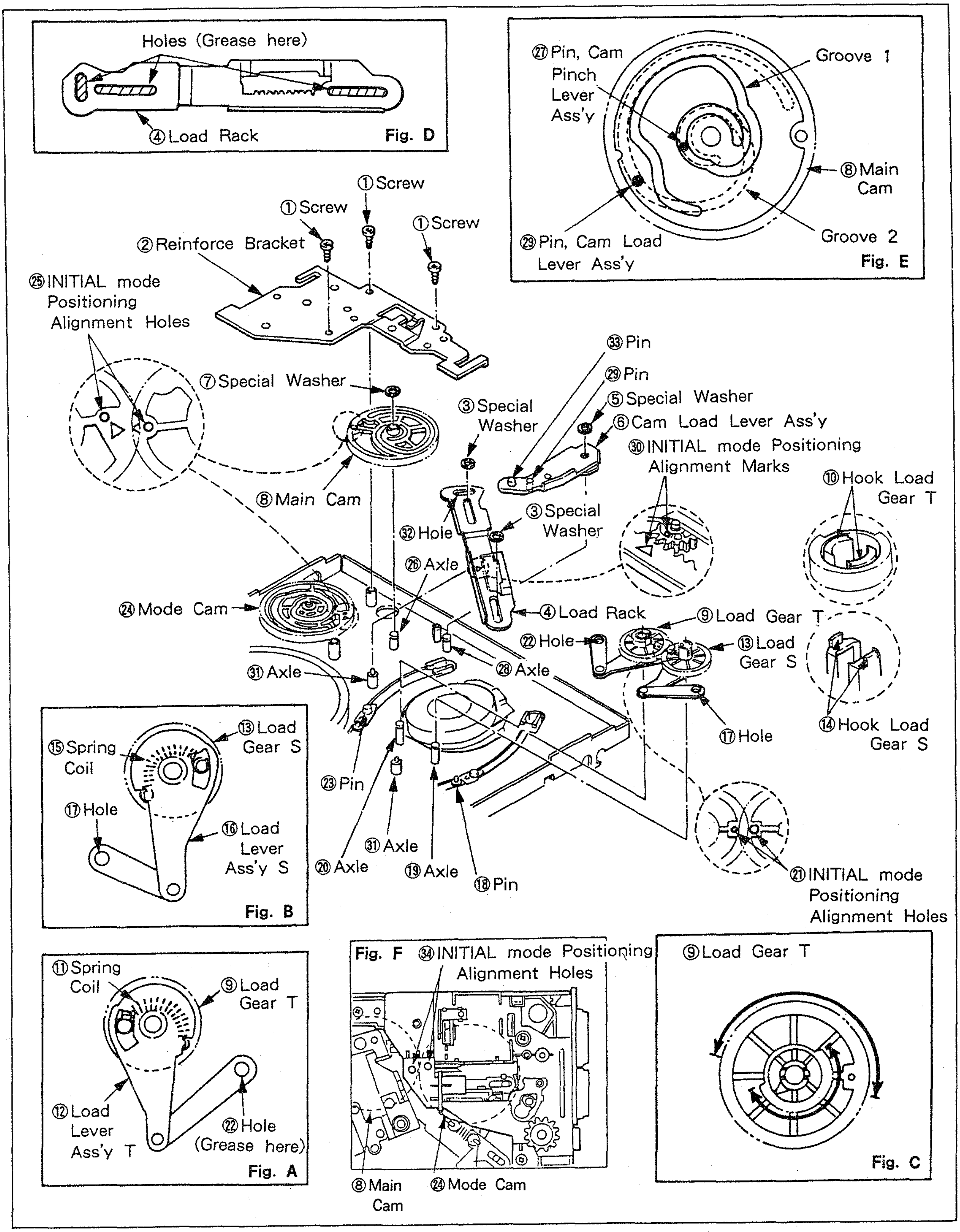
1) Remove connectors from the DRUM MOTOR board (SV-5).
2) Remove the three screws ①, then remove the REINFORCE BRACKET ②.
3) Remove the two special washers ③, then remove the LOAD RACK ④.
4) Remove the special washer ⑤, then remove the CAM LOAD LEVER ASS'Y ⑥.
5) Remove the stop washer ⑦, then remove the MAIN CAM ⑧.
6) Unhook the LOAD GEAR T hook ⑩, then remove the LOAD GEAR T ⑨ as shown in Fig. A, with the SPRING COIL ⑪ and the LOAD LEVER ASS'Y T ⑫ attached to it.
7) Unhook the LOAD GEAR S hook ⑭, then remove the LOAD GEAR S ⑬ as shown in Fig. B, with the SPRING COIL S ⑮ and the LOAD LEVER ASS'Y S ⑯ attached to it.

Note : Take care not to open the LOAD GEAR hooks too much, otherwise they may be deformed or broken. If they are, replace them.

2. Remounting

1) Apply grease to the inner surface of the LOAD LEVER ASS'Y S ⑯ hole ⑰, as shown in Fig. B.
2) Apply grease to the inner surface of the LOAD LEVER ASS'Y T ⑫ hole ㉒ and to the section of the LOAD GEAR T ⑨ indicated with an arrow in Fig. C.
3) Apply grease to GROOVEs 1 and 2 of the MAIN CAM ⑧, and to the outer side of the teeth.
4) Apply grease to the three oval holes of the LOAD RACK ④ as shown in Fig. D.
5) Apply grease to the outer surface of axles ⑲ ⑳㉖ and ㉘.
6) After assembling as shown in Fig. B, mount the LOAD GEAR S ⑬ onto the axle ⑲. Insert the ROLLER BASE S pin ⑱ into the LOAD LEVER ASS'Y S hole ⑰.
7) After assembling as shown in Fig. A, mount the LOAD GEAR T ⑨ onto the axle ⑳. When doing so, set the LOAD GEAR S ⑬ and the LOAD GEAR T ⑨ to the INITIAL mode position ㉑. Insert the ROLLER BASE T pin ㉓ into the hole ㉒ of the LOAD LEVER ASS'Y T ⑫.
8) Mount the MAIN CAM ⑧ on the axle ㉖. At that time, make sure that the positioning hole ㉕ of the MAIN CAM ⑧ and the MODE CAM ㉔ matches the initial positioning hole ㉞ of the MECHANISM CHASSIS. Also check to be sure that the Pin ㉗ of the CAM PINCH LEVER ASSEMBLY is put in the groove ① of the MAIN CAM as shown in Fig. E.
9) Mount the special washer ⑦ to the axle ㉖.
10) Mount the CAM LOAD LEVER ASS'Y ⑥ onto the axle ㉘. Insert the pin ㉙ into the MAIN CAM GROOVE 2 as shown in Fig. E.
11) Mount the special washer ⑤ onto the axle ㉘.
12) Set the LOAD RACK ④ to the INITIAL mode position ㉚ with the LOAD GEAR T ⑨, and mount onto the two axles ㉛. Insert the CAM LOAD LEVER ASS'Y pin ㉝ into the hole ㉜.
13) Mount the two special washers ③ onto the two axles ㉛.
14) Mount the REINFORCE BRACKET ② with the three screws ①.
15) Insert the connector into the DRUM MOTOR board (SV-5).
16) Confirm that loading and unloading are performed smoothly.

Note : Be sure to perform INITIAL mode positioning of cams and gears precisely.


Holes (Grease here)
④ Load Rack
Fig. D
㉗ Pin, Cam Pinch Lever Ass'y
Groove 1
⑧ Main Cam
㉙ Pin, Cam Load Lever Ass'y
Groove 2
Fig. E
① Screw
① Screw
① Screw
② Reinforce Bracket
㉕ INITIAL mode Positioning Alignment Holes
⑦ Special Washer
⑧ Main Cam
③ Special Washer
㉝ Pin
㉙ Pin
⑤ Special Washer
⑥ Cam Load Lever Ass'y
㉚ INITIAL mode Positioning Alignment Marks
⑩ Hook Load Gear T
㉜ Hole
③ Special Washer
㉖ Axle
㉔ Mode Cam
④ Load Rack
⑨ Load Gear T
㉒ Hole
⑬ Load Gear S
㉘ Axle
㉛ Axle
⑰ Hole
⑭ Hook Load Gear S
⑮ Spring Coil
⑬ Load Gear S
⑰ Hole
⑯ Load Lever Ass'y S
Fig. B
㉓ Pin
㉛ Axle
⑳ Axle
⑲ Axle
⑱ Pin
㉑ INITIAL mode Positioning Alignment Holes
⑪ Spring Coil
⑨ Load Gear T
⑫ Load Lever Ass'y T
㉒ Hole (Grease here)
Fig. A
Fig. F
㉞ INITIAL mode Positioning Alignment Holes
⑧ Main Cam
㉔ Mode Cam
⑨ Load Gear T
Fig. C

5-4-1. Loading Mechanism Main Parts

5-4-2. Mode Cam (See Fig. 5-4-2.)

1. Removal

1) Set the INITIAL mode with the mode selector (VHJ-0050).
2) Remove the REINFORCE BRACKET as instructed in 5-4-1.
3) Remove the two stop washers ①, then remove the CAM PLATE SLIDE ASS'Y ②.
4) Remove the MODE CAM ③.

2. Remounting

1) Referring to 5-4-1., confirm that the MAIN CAM is in the INITIAL mode position.
2) In case the MAIN CAM is misplaced, use the mode selector (VHJ-0050) to align the MAIN CAM positioning hole with the chassis INITIAL mode position hole (refer to 5-4-1. for the INITIAL mode position). Since the ROTARY SWITCH (mode detector switch) does not rotate, the mode selector indicator lamp will not show the correct mode.
3) Align the ROTARY SWITCH (mode detector switch) ④ with the INITIAL mode position mark ⑤ as shown in Fig. A.
4) Mount the MODE CAM ③ onto the axle ⑥. Do it so that the SLIDE CAM ASS'Y pin ⑪ is placed in the GROOVE 3 as shown in Fig. B.
5) Mount the CAM PLATE SLIDE ASS'Y ② onto the axles ⑥ and ⑦. Do it so that the pin ⑧ gets into the GROOVE 4 of the MODE CAM as shown in Fig. B, and the point ⑨ of the bent-up part into the ACT PLATE SLIDE ASS'Y hole ⑩.
6) Mount the two special washers ① onto the axles ⑥ and ⑦.
7) Mount the REINFORCE BRACKET as instructed in 5-4-1.

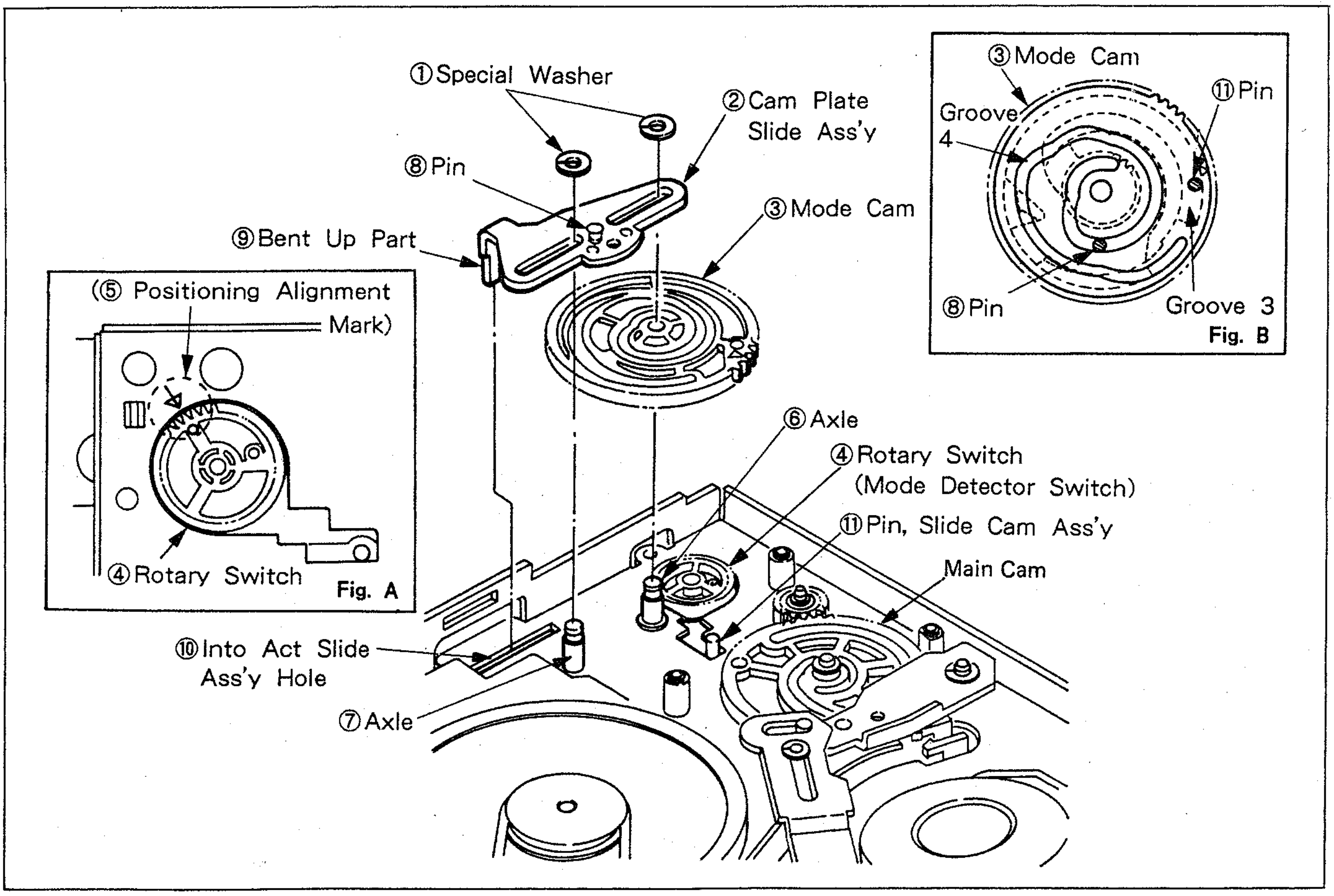

①Special Washer
②Cam Plate Slide Ass'y
⑧Pin
③Mode Cam
⑨Bent Up Part
(⑤ Positioning Alignment Mark)
④Rotary Switch
Fig. A
⑥Axle
④Rotary Switch (Mode Detector Switch)
⑪Pin, Slide Cam Ass'y
Main Cam
⑩Into Act Slide Ass'y Hole
⑦Axle
③Mode Cam
⑪Pin
Groove 4
⑧Pin
Groove 3
Fig. B

Fig. 5-4-2. Mode Cam

5-5. COMPL HEAD BRACKET (ACE HEAD) (See Fig. 5-5-1.)

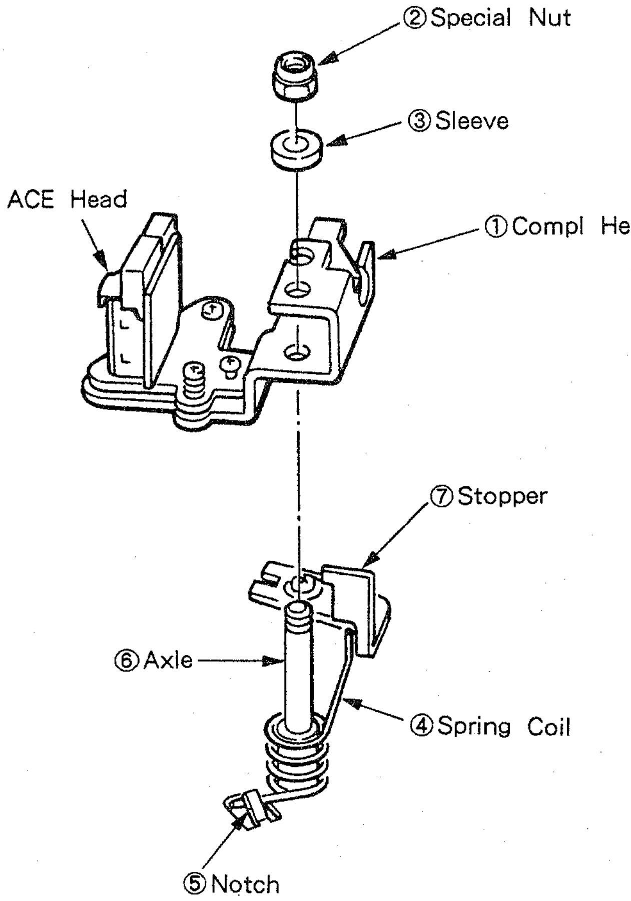
1. Removal

1) Remove the COMPL HEAD BRACKET special mounting nut ②.
2) Remove the SLEEVE ③, the COMPL HEAD BRACKET ① and the ACE HEAD SPRING COIL ④, in that order.

Note : Take care not to scratch or soil the ACE head surface.

2. Remounting

1) Apply grease to the axle ⑥ as shown in Fig. A.
2) Apply grease to the spot where the COMPL HEAD BRACKET ① makes contact with the STOPPER ⑦ (See Fig. A).
3) Mount the ACE HEAD SPRING COIL ④ and the COMPL HEAD BRACKET ①, in that order, onto the axle ⑥. Hook one end of the ACE HEAD SPRING COIL ④ to the notch ⑤, and the other end to the COMPL HEAD BRACKET, so that the COMPL HEAD BRACKET is pressed against the STOPPER ⑦ (See Fig. A).
4) Mount the SPECIAL NUT ② onto the axle ⑥ through the SLEEVE ③.
5) Clean the ACE head surface with a chamois leather moistened with methyl alcohol.
6) Perform ACE head adjustment as instructed in 6-4.



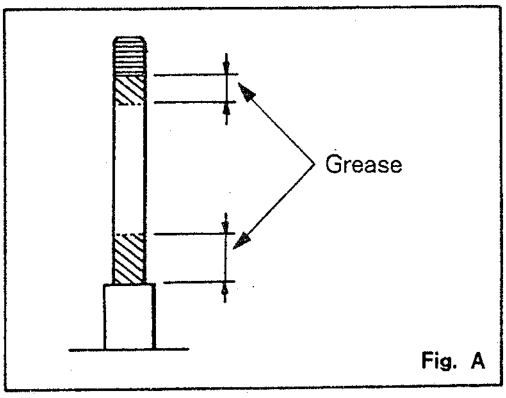


Fig. A

Fig. 5-5-1. Compl Head Bracket (ACE Head)

5-6. PINCH ROLLER PRESSURE MECHANISM (See Fig. 5-6-1.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the COMPL HEAD BRACKET as instructed in 5-5.
3) Remove the PINCH SPRING COIL ①.
4) Remove the special washer ②, then remove the PINCH LEVER ASS'Y ③.
5) Remove the REV GUIDE LEVER SPRING COIL ④.
6) Remove the REV GUIDE LEVER ASS'Y ⑥ from the hook ⑤ of the plastic molding bearing on the bottom side. Use a jig VHJ-0073 shown in Fig. 5-6-2 to widen the hook ⑤ of the plastic molding bearing. By so doing, the above removal of the REV GUIDE LEVER ASS'Y ⑥ can be made more easily. Care should be taken to avoid pushing the jig VHJ-0073 too much. Pushing it too hard may damage the hook in an extreme case.
7) Remove the LINK LOCK SPRING COIL ⑦.
8) Remove the special washer ⑧, then remove the PINCH CAM LEVER ASS'Y ⑨.
9) Remove the ACT PINCH SLIDE ASS'Y ⑩.

Note : If damaged the claw ⑤ of the plastic bearing, reference should be made to Section 3. "Method of Repairing the Bearing Section of REV GUIDE LEVER ASSEMBLY".

2. Remounting

1) Apply grease to pins ⑫/⑬ and axles ⑯/⑱.
2) Apply grease to the ACT PINCH SLIDE ASS'Y pin ⑰.
3) Set the INITIAL mode with the mode selector (VHJ-0050).
4) Mount the ACT PINCH SLIDE ASS'Y ⑩ onto pins ⑫ and ⑬.
5) Insert the pin ⑭ of the PINCH CAM LEVER ASS'Y ⑨ into the MAIN CAM ⑪ GROOVE 1, and mount onto the axle ⑯ while inserting the pin ⑰ of the ACT PINCH SLIDE ASS'Y into the hole ⑮.
6) Mount the special washer ⑧ onto the axle ⑯.
7) Hook the LINK LOCK SPRING COIL ⑦ to the PINCH CAM LEVER ASS'Y ⑨.
8) Mount the REV GUIDE LEVER ASS'Y ⑥ to the plastic molding bearing, then fix it with the hook ⑤ at the bottom.
9) Hook the REV GUIDE LEVER SPRING COIL ④.
10) Mount the PINCH LEVER ASS'Y ③ to the axle ⑱.
11) Mount the special washer ② to the axle ⑱.
12) Hook the PINCH SPRING COIL ① between the ACT PINCH SLIDE ASS'Y ⑩ and the PINCH LEVER ASS'Y ③.
13) Mount the COMPL HEAD BRACKET as instructed in 5-5.
14) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
15) Perform ACE head adjustment as instructed in 6-4.

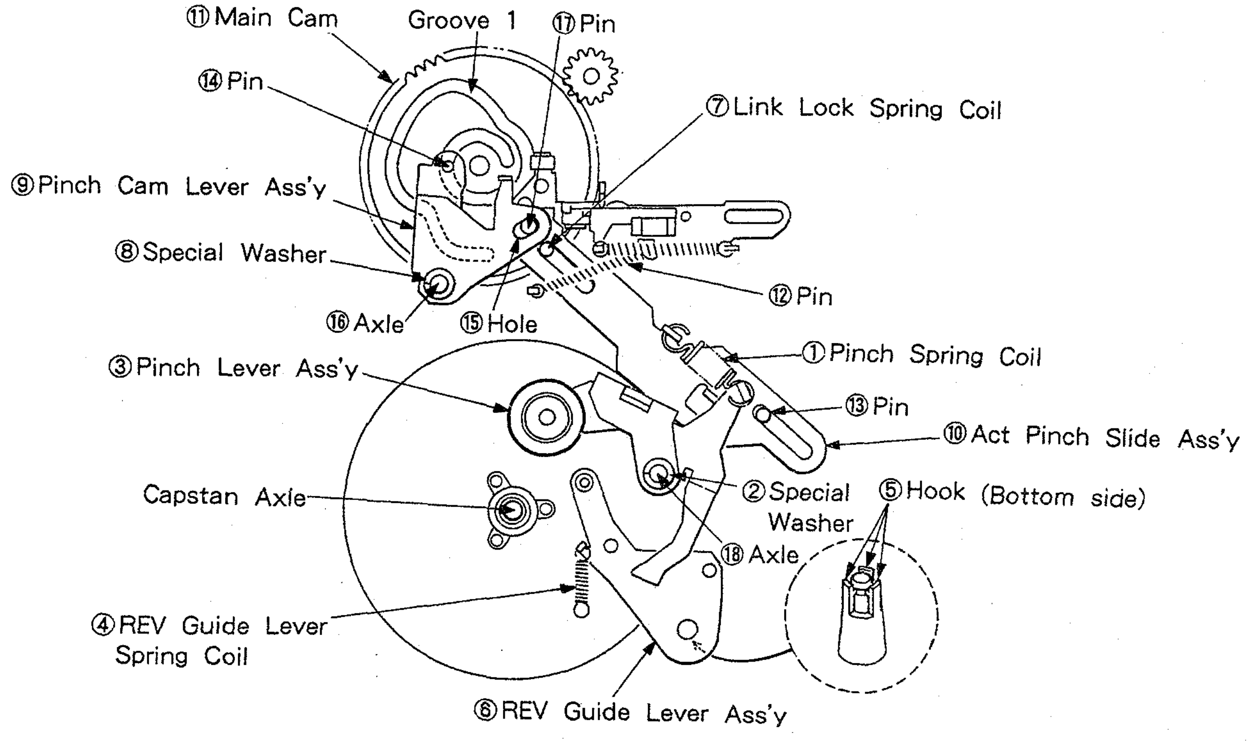
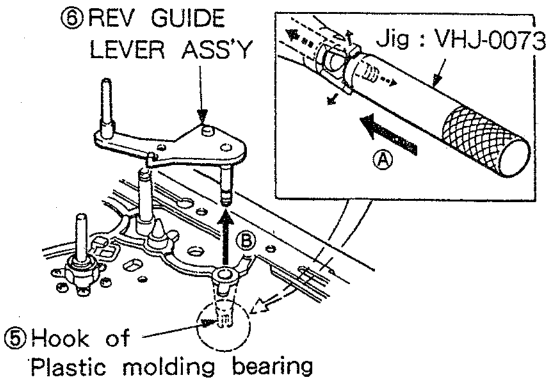

⑪Main Cam
Groove 1
⑰Pin
⑭Pin
⑦Link Lock Spring Coil
⑨Pinch Cam Lever Ass'y
⑧Special Washer
⑫Pin
⑯Axle
⑮Hole
①Pinch Spring Coil
③Pinch Lever Ass'y
⑬Pin
⑩Act Pinch Slide Ass'y
Capstan Axle
②Special Washer
⑤Hook (Bottom side)
⑱Axle
④REV Guide Lever Spring Coil
⑥REV Guide Lever Ass'y

Fig. 5-6-1. Pinch Roller Pressing Mechanism


⑥REV GUIDE LEVER ASS'Y
Jig : VHJ-0073
Ⓐ
Ⓑ
⑤Hook of Plastic molding bearing

Remove REV GUIDE LEVER ASS'Y in the direction of arrow Ⓑ, pushing VHJ-0073 slightly in the direction of arrow Ⓐ.
Be careful not to damage the hook by pushing too much.

Fig. 5-6-2 Method of Using the Jig VHJ-0073

3. Method of Repairing the Bearing Section of REV GUIDE LEVER ASSEMBLY

If the hook of the plastic molding bearing is damaged in the process of removing the REV GUIDE LEVER ASS'Y, proceed with the repair as follows :

1) Scrape the broken hook of the bearing section with a cutter knife and flatten it.
2) Insert the REV GUIDE LEVER ASS'Y in the bearing and fit a stopper washer in. The special washer to be used must be Part No. 411 109 1605. This stop washer (Part No. 411 109 1605) is the same as that used on SUPPLY REEL ASS'Y or TAKE-UP REEL ASS'Y.
   Remove the REV GUIDE LEVER ASSEMBLY toward an arrow B while pushing the jig VHJ-0073 lightly in the direction of an arrow.

Pushing the jig VHJ-0073 too much may cause hook breakage. Therefore, care should be taken.

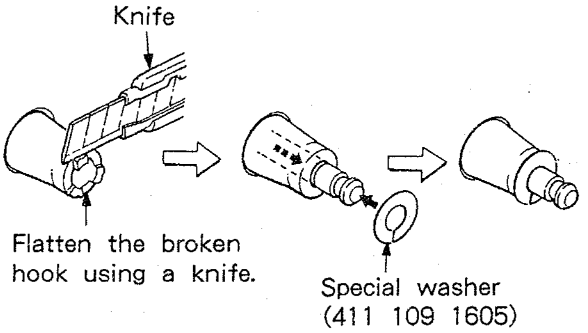

Knife
Flatten the broken hook using a knife.
Special washer (411 109 1605)

Fig. 5-6-3 Method of Repairing the Bearinig Section of the REV GUIDE LEVER ASSEMBLYE

5-7. BRAKE MECHANISM

5-7-1. Sub Take-up Brake Ass'y (See Fig. 5-7-1.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the SPRING COIL ①.
3) While pushing the hook ② in the direction of arrow, remove the SUB TAKE-UP BRAKE ASS'Y ③.

2. Remounting

1) Mount the SUB TAKE-UP BRAKE ASS'Y ③ onto the pin ④. Confirm that the hook ② is firmly hooked to the chassis.
2) Fit the SPRING COIL between hooks ⑤ and ⑥.
3) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

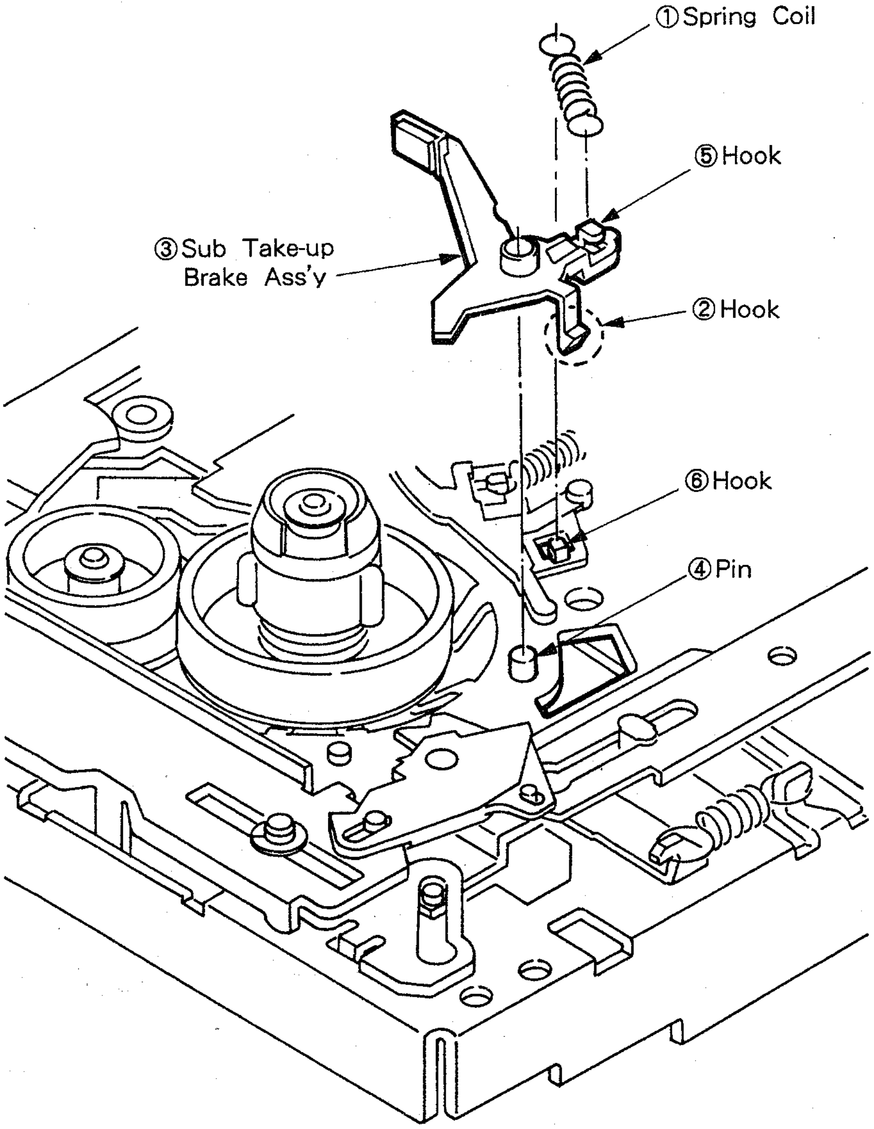

①Spring Coil
⑤Hook
③Sub Take-up Brake Ass'y
②Hook
⑥Hook
④Pin

Fig. 5-7-1. Sub Take-up Brake Ass'y

5-7-2. Supply Brake Ass'y and Take-up Brake Ass'y (See Fig. 5-7-2.)

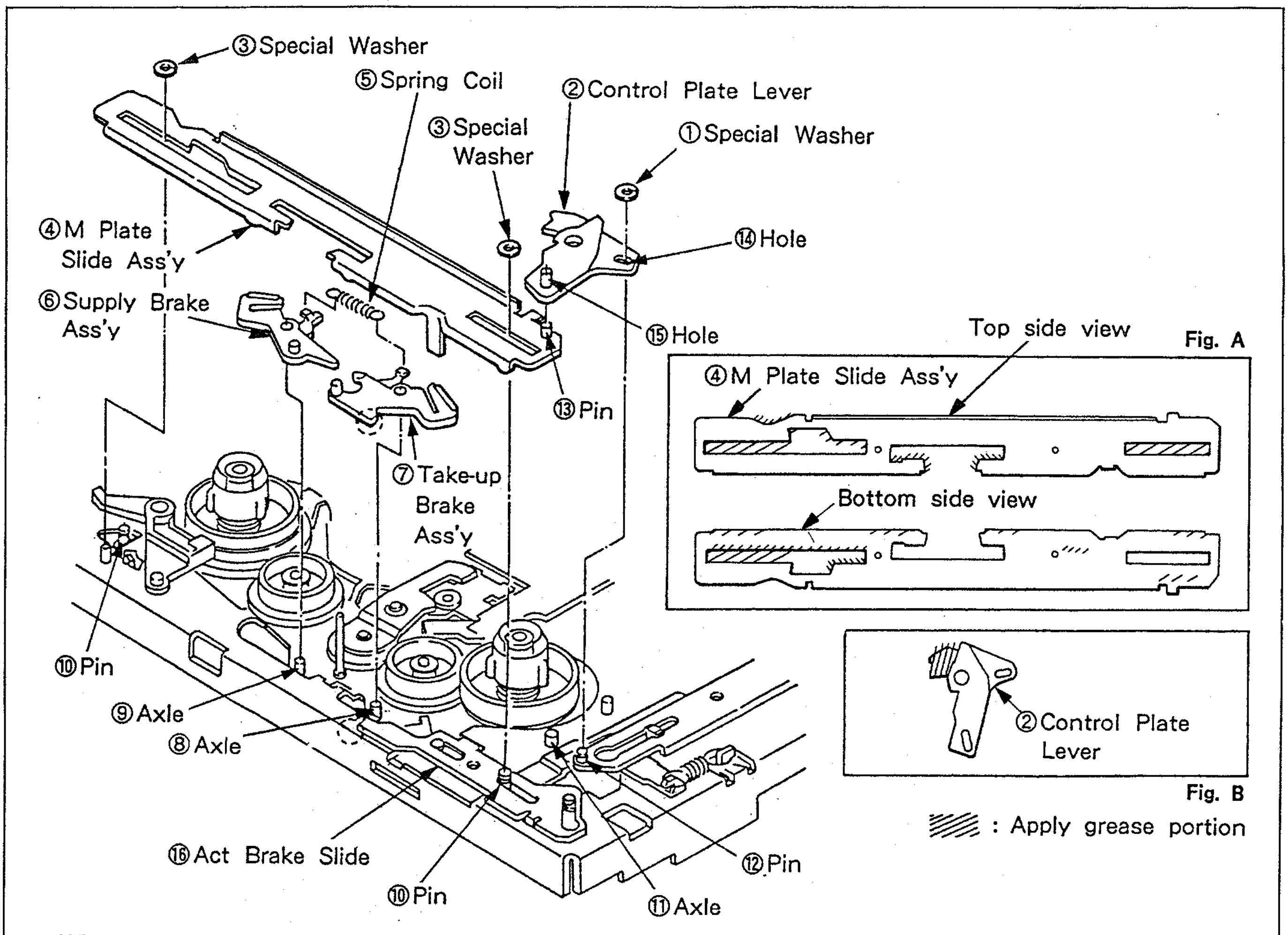
1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the SUB TAKE-UP BRAKE as instructed in 5-7-1.
3) Remove the special washer ①, then remove the CONTROL PLATE LEVER ②.
4) Remove the two special washers ③, then remove the M PLATE SLIDE ASS'Y ④.
5) Remove the SPRING COIL ⑤.
6) Remove the SUPPLY BRAKE ASS'Y ⑥ and the TAKE-UP BRAKE ASS'Y ⑦.

Note : Take care not to soil the brake shoes.

2. Remounting

1) Apply a thin layer of grease to axles ⑧ and ⑨.
2) Mount the TAKE-UP BRAKE ASS'Y ⑦ onto the axle ⑧.
3) Mount the SUPPLY BRAKE ASS'Y ⑥ onto the axle ⑨.
4) After applying a thin layer of grease to the M PLATE SLIDE ASS'Y ④ as shown in Fig. A, mount it onto the two pins ⑩.
5) Mount the two special washers ③ onto the two pins ⑩.
6) After applying grease to the CONTROL PLATE LEVER ② as shown in Fig. B, mount it onto the axle ⑪. Insert the ACT PLATE SLIDE ASS'Y pin ⑫ into the hole ⑭, and the M PLATE SLIDE ASS'Y pin ⑬ into the hole ⑮.
7) Mount the special washer ① onto the pin ⑫.
8) Mount the SUB TAKE-UP BRAKE as instructed in 5-7-1.
9) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.


③Special Washer
⑤Spring Coil
②Control Plate Lever
③Special Washer
①Special Washer
④M Plate Slide Ass'y
⑭Hole
⑥Supply Brake Ass'y
⑮Hole
⑬Pin
⑦Take-up Brake Ass'y
⑩Pin
⑨Axle
⑧Axle
⑯Act Brake Slide
⑩Pin
⑪Axle
⑫Pin
Top side view
Fig. A
④M Plate Slide Ass'y
Bottom side view
②Control Plate Lever
Fig. B

▨ : Apply grease portion

When assembling, the contact surfaces of Take-up Brake ⑦ and the Brake Slide ⑯ marked with ◌ should contact but not overlap each other.

Fig. 5-7-2. Supply Brake Ass'y & Take-up Brake Ass'y

5-7-3. Tension Lever Ass'y and Band Holder Ass'y (See Fig. 5-7-3.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the SPRING COIL ①.
3) Remove the screw ③ fixing the BAND HOLDER ASS'Y ②.
4) Push the SUB SUPPLY BRAKE ④ in the direction of the arrow A, setting the BAND HOLDER ASS'Y ② free.
5) Open the hook ⑤ a little and remove the TENSION LEVER ASS'Y ⑥. Take care not to open the hook ⑤ too much, otherwise it may be deformed or broken.
6) Remove the hook ⑦ of the BAND HOLDER ASS'Y.

2. Remounting

1) Mount the BAND HOLDER ASS'Y hook ⑦ into the TENSION LEVER ASS'Y hole ⑧.
2) Insert the TENSION LEVER ASS'Y axle ⑨ into the hole ⑩ and confirm that the hook ⑤ is hooked.
3) While pushing the SUB SUPPLY BRAKE ④ in the direction of arrow A, mount the BAND HOLDER ASS'Y ② with the screw ③.
4) Hook the SPRING COIL ① between the hooks ⑪ and ⑫.
5) Perform TENSION POLE position adjustment as instructed in 6-3.
6) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

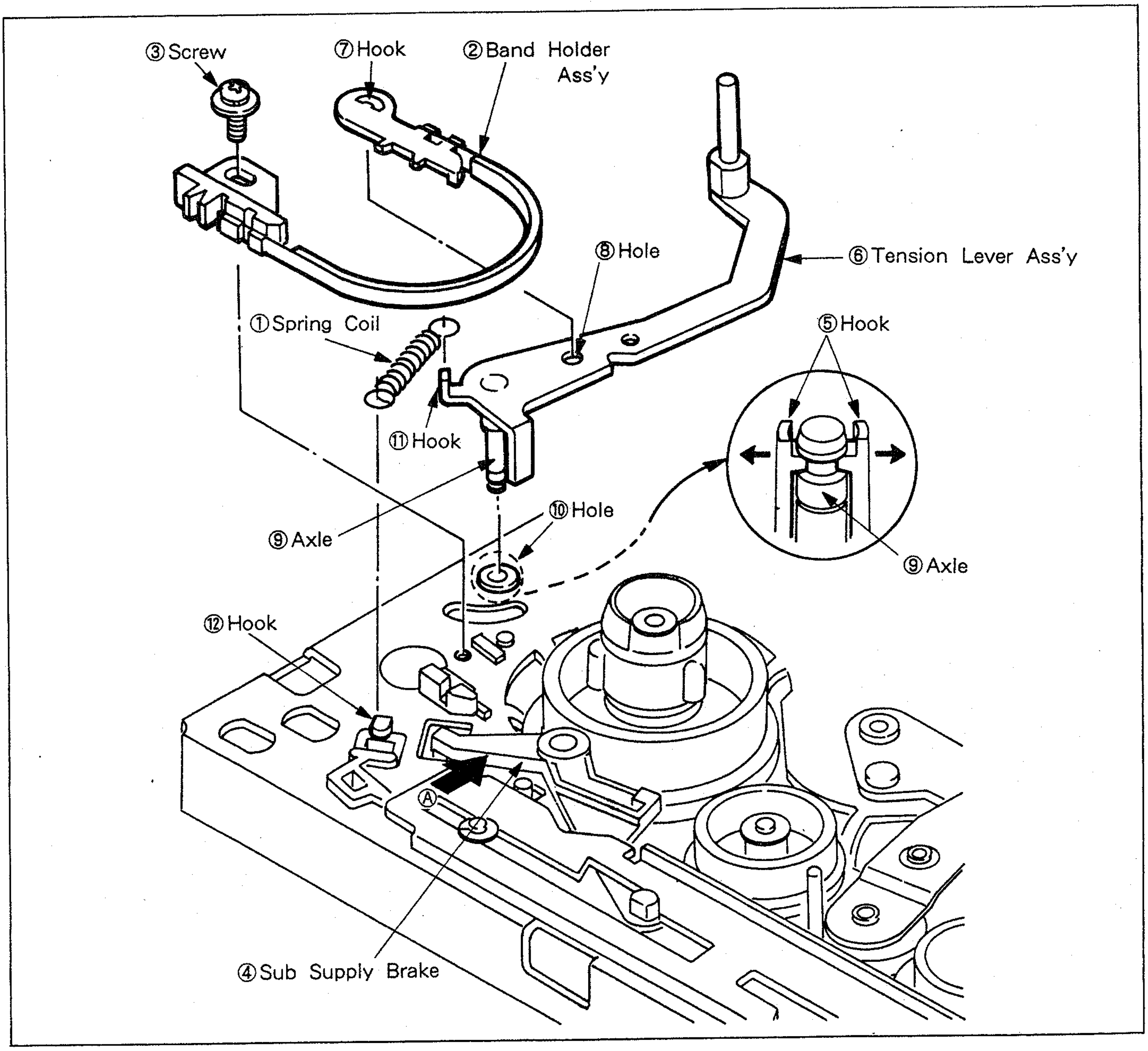

③Screw
⑦Hook
②Band Holder Ass'y
⑧Hole
⑥Tension Lever Ass'y
①Spring Coil
⑤Hook
⑪Hook
⑩Hole
⑨Axle
⑨Axle
⑫Hook
Ⓐ
④Sub Supply Brake

Fig. 5-7-3. Tension Lever Ass'y & Band Holder Ass'y

5-7-4. Capstan Brake Ass'y (See Fig. 5-7-4.)

1. Removal

1) Remove the SPRING COIL ①.
2) Unhook the hook ②, then remove the CAPSTAN BRAKE ASS'Y ③.

2. Remounting

1) Mount the CAPSTAN BRAKE ASS'Y ③ onto the axle ④. Confirm that the hook ② is hooked to the chassis.
2) Hook the SPRING COIL ① between hooks ⑤ and ⑥. Fix the hook ⑥ side with adhesive (use an adhesive that allows later detaching).

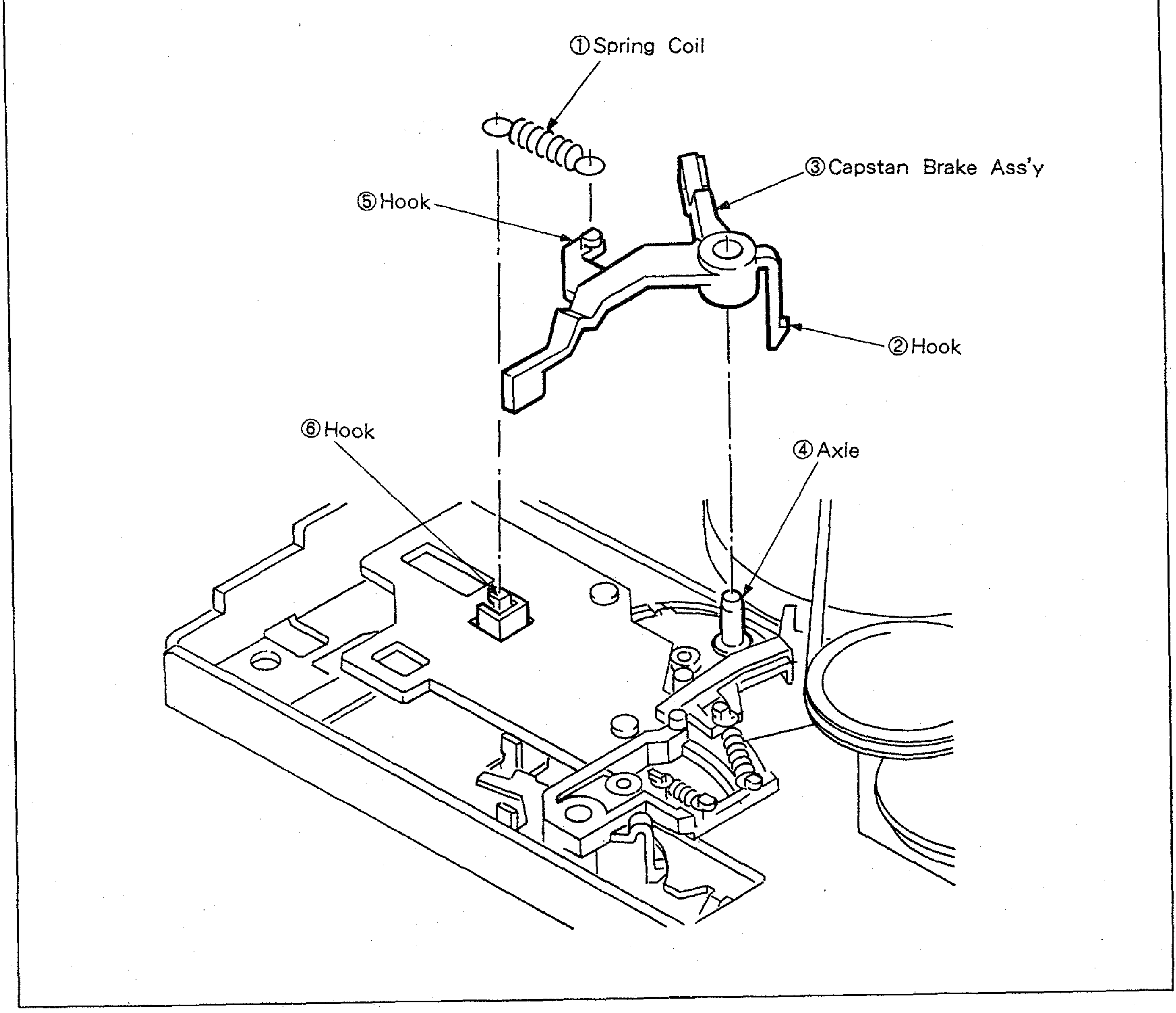

①Spring Coil
③Capstan Brake Ass'y
⑤Hook
②Hook
⑥Hook
④Axle

Fig. 5-7-4. Capstan Brake Ass'y

5-8. REEL TABLE DRIVE MECHANISM

5-8-1. Supply Reel Ass'y and Supply Reel Gear (See Fig. 5-8-1.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the BAND HOLDER ASS'Y as instructed in 5-7-3.
3) Set the PLAY mode with the mode selector (VHJ-0050).
4) Remove the special washer ①, then remove the SUPPLY REEL ASS'Y ② and the washer ③.
5) Remove the special washer ④.
6) While pushing the SUPPLY BRAKE ASS'Y ⑤ in the direction of arrow A, remove the SUPPLY REEL GEAR ⑥ and the washer ⑦.

Note : Be sure that no dirt gets on the section where both brake shoes make contact.

2. Remounting

1) Apply a little oil (less than one drop) to the part of the axle ⑧ indicated by the arrow B, then mount the washer ⑦.
2) While pushing the SUPPLY BRAKE ASS'Y ⑤ in the direction of arrow A, mount the SUPPLY REEL GEAR ⑥ onto the axle ⑧.
3) Mount the special washer ④ to the axle ⑧.
4) Apply 1 drop of oil to the part of the axle ⑨ indicated by the arrow C, then mount the washer ③.
5) Mount the SUPPLY REEL ASS'Y ② onto the axle ⑨.
6) Perform reel table height adjustment as instructed in 6-2-1.
7) Mount the special washer ① onto the axle ⑨.
8) Mount the BAND HOLDER ASS'Y as instructed in 5-7-3.
9) Perform tension pole position adjustment as instructed in 6-3.
10) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

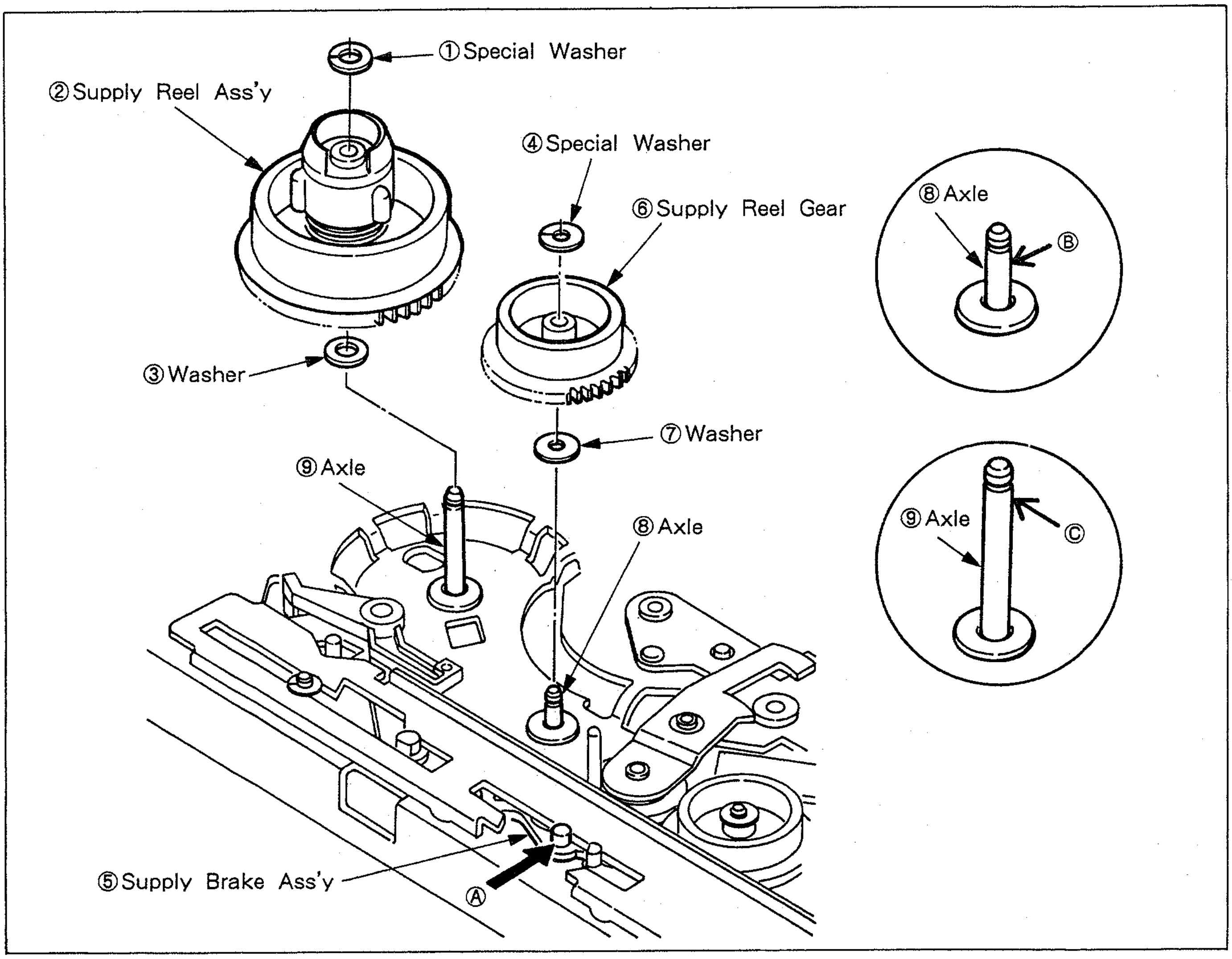


Fig. 5-8-1. Supply Reel Ass'y & Supply Reel Gear

5-8-2. Take-up Reel Ass'y (See Fig. 5-8-2.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the special washer ①.
3) Push the SUB TAKE-UP BRAKE ASS'Y ② in the direction of arrow A to release the brake, then remove the TAKE-UP REEL ASS'Y ③ and the washer ④.

Note : Be sure that no dirt gets on the section where both brake shoes make contact.

2. Remounting

1) Apply 1 drop of oil to the part of the axle ⑤ indicated by the arrow B, then mount the washer ④.
2) While pushing the SUB TAKE-UP BRAKE ASS'Y ② in the direction of arrow A, mount the TAKE-UP REEL ASS'Y ③ onto the axle ⑤.
3) Perform reel table height adjustment as instructed in 6-2.
4) Mount the special washer ① onto the axle ⑤.
5) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

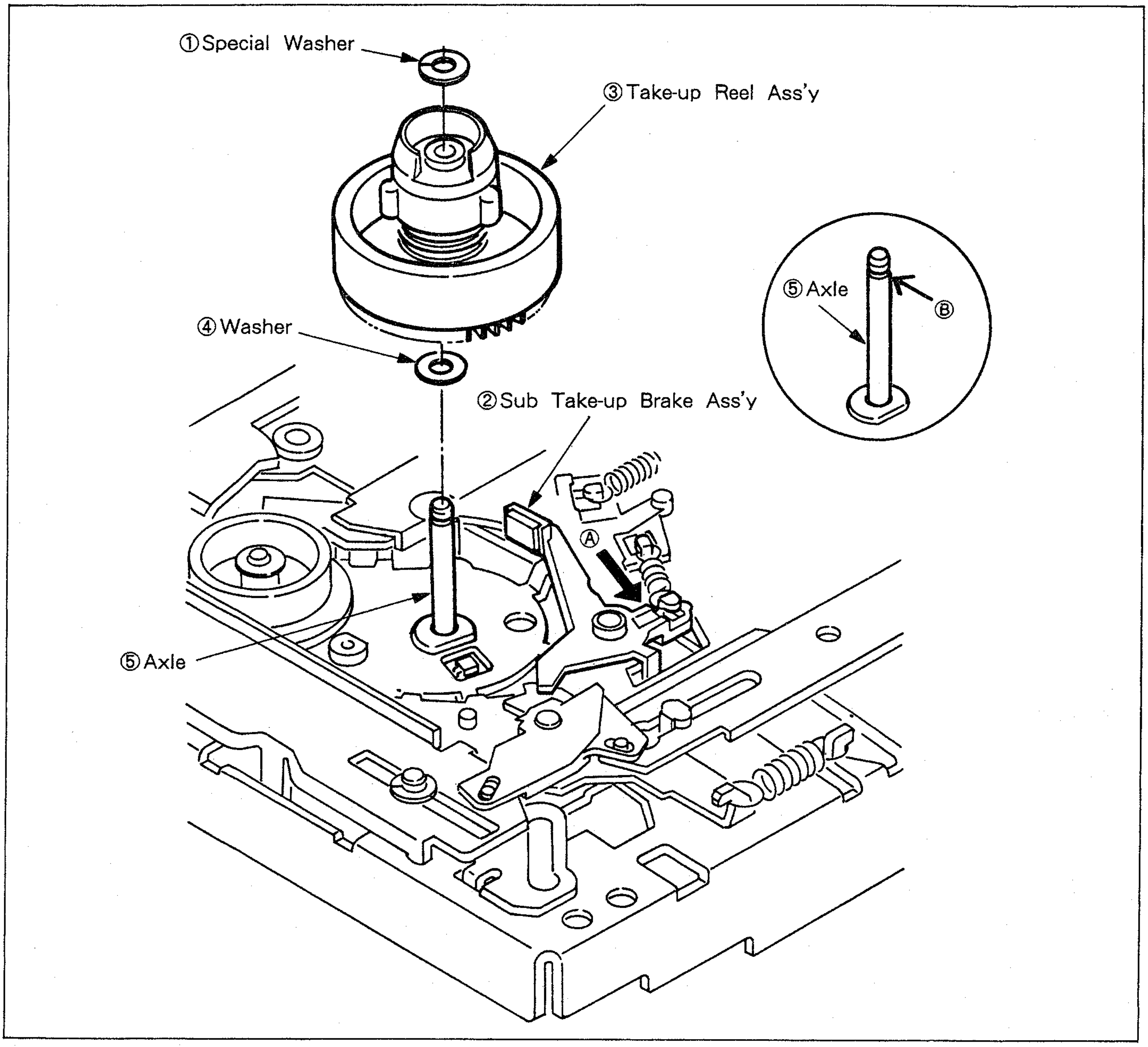


Fig. 5-8-2. Take-up Reel Ass'y

5-8-3. Take-up Reel Gear (See Fig. 5-8-3.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the TAKE-UP REEL ASS'Y as instructed in 5-8-2.
3) Remove the SUB TAKE-UP BRAKE ASS'Y as instructed in 5-7-1.
4) Remove the TAKE-UP BRAKE ASS'Y as instructed in 5-7-2.
5) Remove the special washer ①, then remove the TAKE-UP REEL GEAR ③ and the washer ④.

2. Remounting

1) Apply a little oil (less than one drop) to the part of the axle ⑤ indicated with an arrow.
2) Mount the washer ④ and the TAKE-UP REEL GEAR ③ onto the axle ⑤.
3) Mount the special washer ① onto the axle ⑤.
4) Mount the TAKE-UP BRAKE ASS'Y as instructed in 5-7-2.
5) Mount the SUB TAKE-UP BRAKE ASS'Y as instructed in 5-7-1.
6) Mount the TAKE-UP REEL ASS'Y as instructed in 5-8-2.
7) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

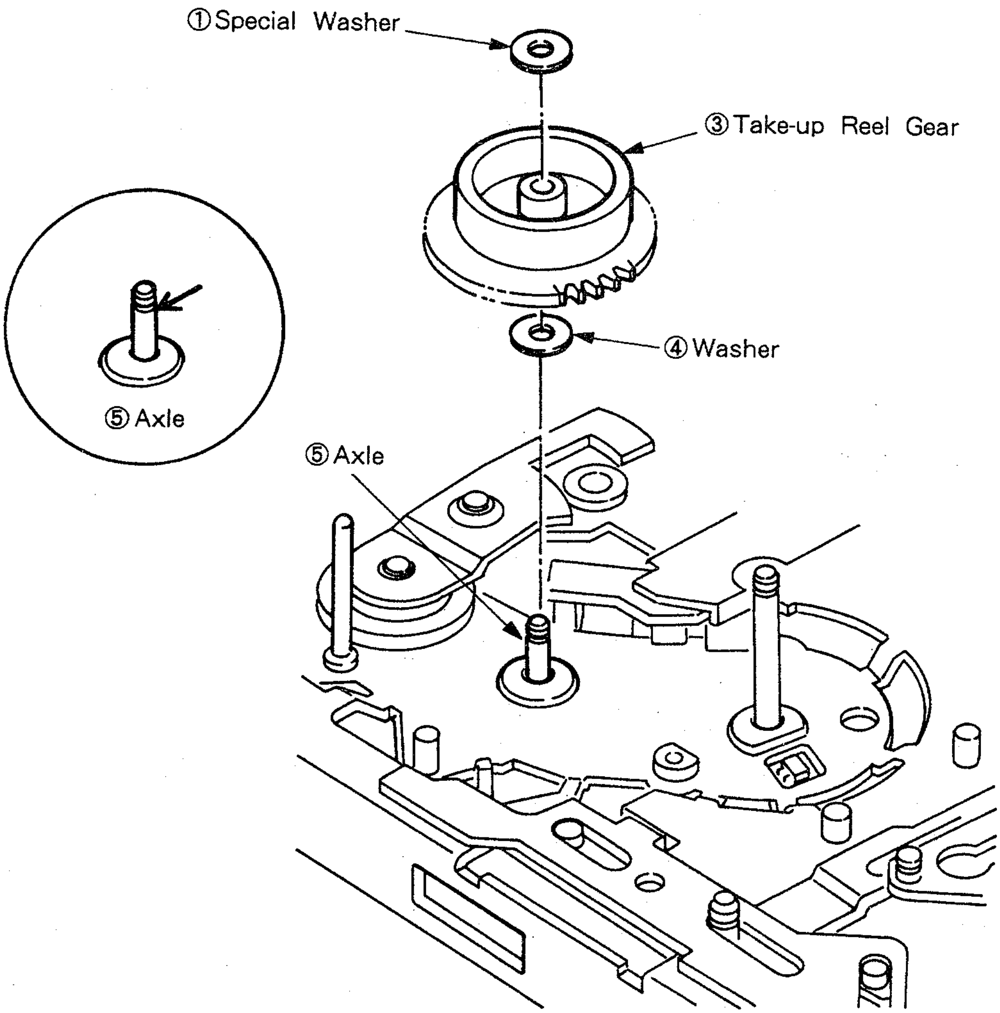


Fig. 5-8-3. TaKe-up Reel Gear

5-8-4. Reel Pulley and Friction Gear Ass'y (See Fig. 5-8-4.)

1. Removal

1) Remove the two screws ①, then remove the PULLEY BRACKET ②.
2) Remove the REEL DRIVE BELT ③.
3) Remove the special washer ④, then remove the REEL PULLEY ⑤.
4) Remove the special washer ⑥, then remove the FRICTION GEAR ASS'Y ⑦ and the washer ⑧.

2. Remounting

1) Apply one drop of oil to the parts of axles ⑨ and ⑩ indicated with an arrow.
2) Mount the washer ⑧ and the FRICTION GEAR ASS'Y ⑦ onto the axle ⑨.
3) Mount the special washer ⑥ onto the axle ⑨.
4) Mount the REEL PULLEY ⑤ onto the axle ⑩.
5) Mount the special washer ④ onto the axle ⑩.
6) Set the REEL DRIVE BELT ③.
7) Mount the PULLEY BRACKET ② with the two screws ①.

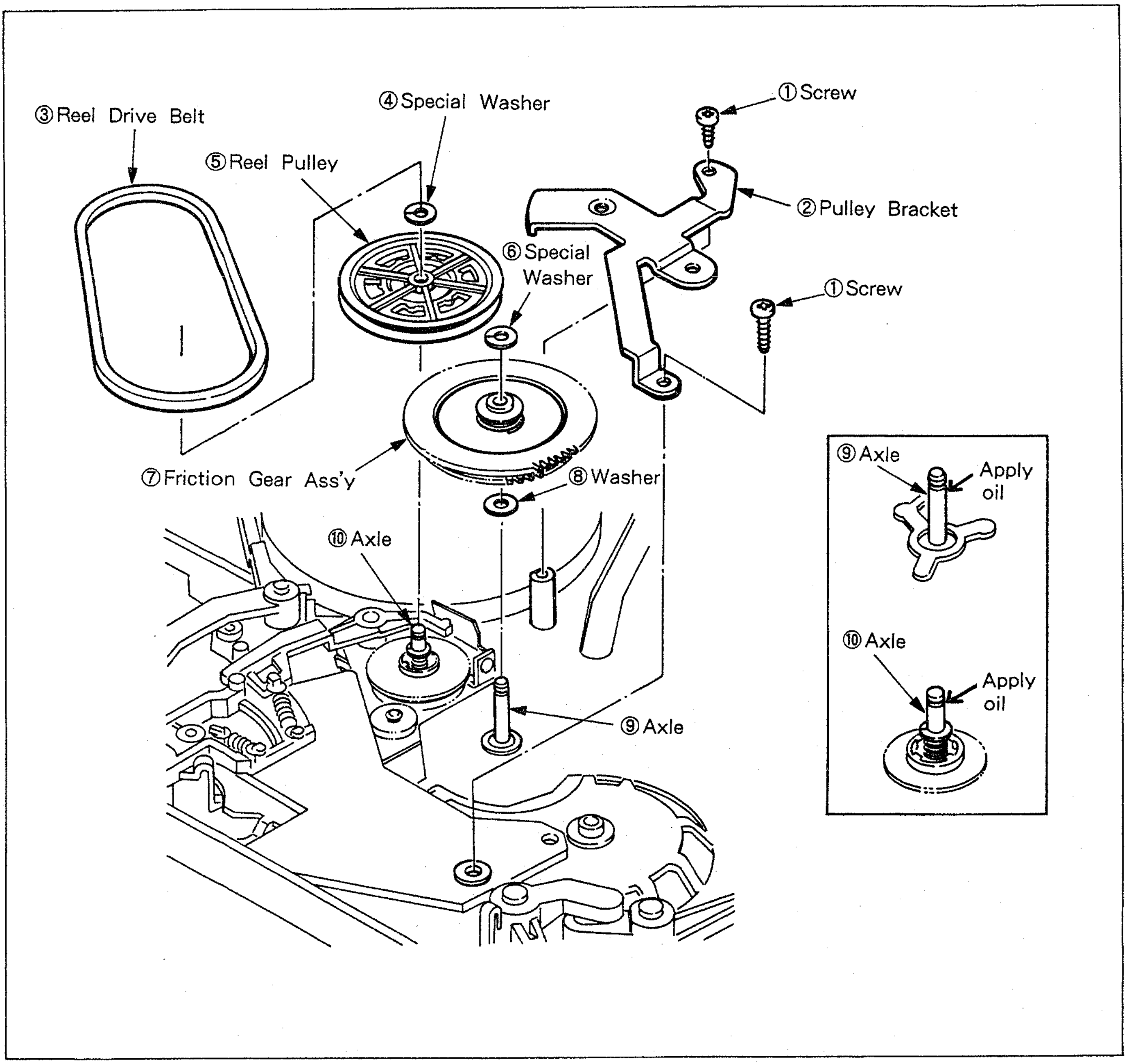

③Reel Drive Belt
④Special Washer
⑤Reel Pulley
①Screw
②Pulley Bracket
⑥Special Washer
①Screw
⑦Friction Gear Ass'y
⑧Washer
⑩Axle
⑨Axle
⑨Axle
Apply oil
⑩Axle
Apply oil

Fig. 5-8-4. Reel Pulley & Friction Gear

5-8-5. COMPL Clutch (See Fig. 5-8-5.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the PULLEY BRACKET, the REEL DRIVE BELT and the REEL PULLEY as instructed in 5-8-4.
3) Remove the screw ①, then remove the COMPL MC-4 ②.
4) Remove the two screws ③, then remove the COMPL CLUTCH ④.

2. Remounting

1) Mount the COMPL CLUTCH ④ with the two screws ③, aligning it with the protuberance ⑤.
2) After inserting the CN831 (COMPL MC-4) into the CN801 (COMPL MC-1), mount the COMPL MC-4 with the screw ①.
3) Mount the REEL PULLEY, the REEL DRIVE BELT and the PULLEY BRACKET as instructed in 5-8-4.
4) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

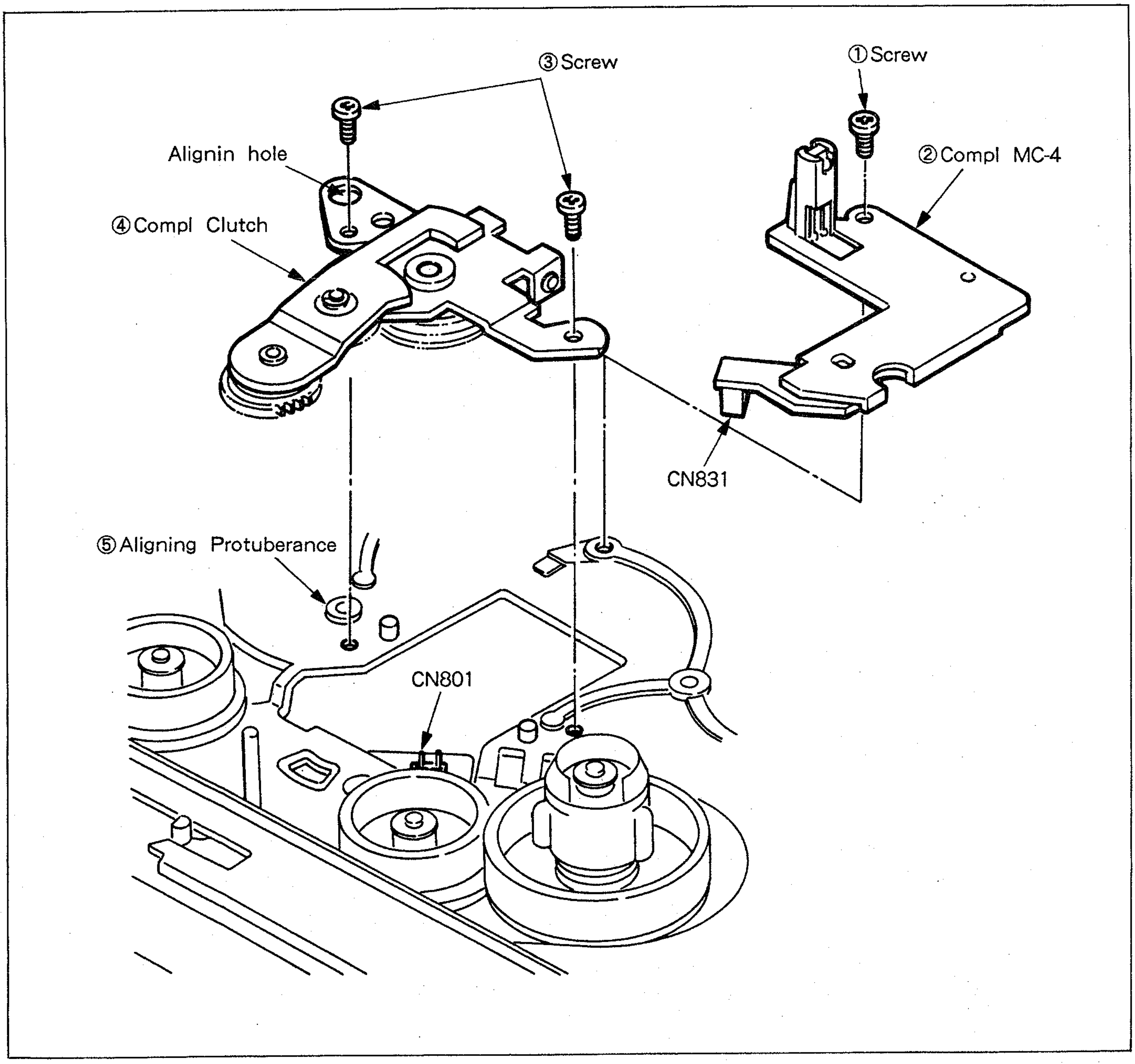

③Screw
①Screw
Alignin hole
②Compl MC-4
④Compl Clutch
CN831
⑤Aligning Protuberance
CN801

Fig. 5-8-5. Compl Clutch

5-8-6. Clutch Change Lever and Clutch Lever Ass'y (See Fig. 5-8-6.)

1. Removal

1) Remove the CAPSTAN BRAKE ASS'Y as instructed in 5-7-4.
2) Remove the PULLEY BRACKET, the REEL DRIVE BELT and the REEL PULLEY as instructed in 5-8-4.
3) Remove the SPRING COIL ①.
4) Unhook the hook ②, then remove the CLUTCH CHANGE LEVER ③.
5) Unhook the hook ⑤, then remove the CLUTCH LEVER ASS'Y ⑥.

2. Remounting

1) Mount the CLUTCH LEVER ASS'Y ⑥ onto the axle ⑦. Confirm that the hook ⑤ is hooked to the chassis.
2) Mount the CLUTCH CHANGE LEVER ③ onto the axle ⑧. Confirm that the hook ② is hooked to the chassis.
3) Hook the SPRING COIL ① between the hooks ⑨ and ⑩.
4) Mount the PULLEY BRACKET, the REEL DRIVE BELT and the REEL PULLEY as instructed in 5-8-4.
5) Mount the CAPSTAN BRAKE ASS'Y as instructed in 5-7-4.

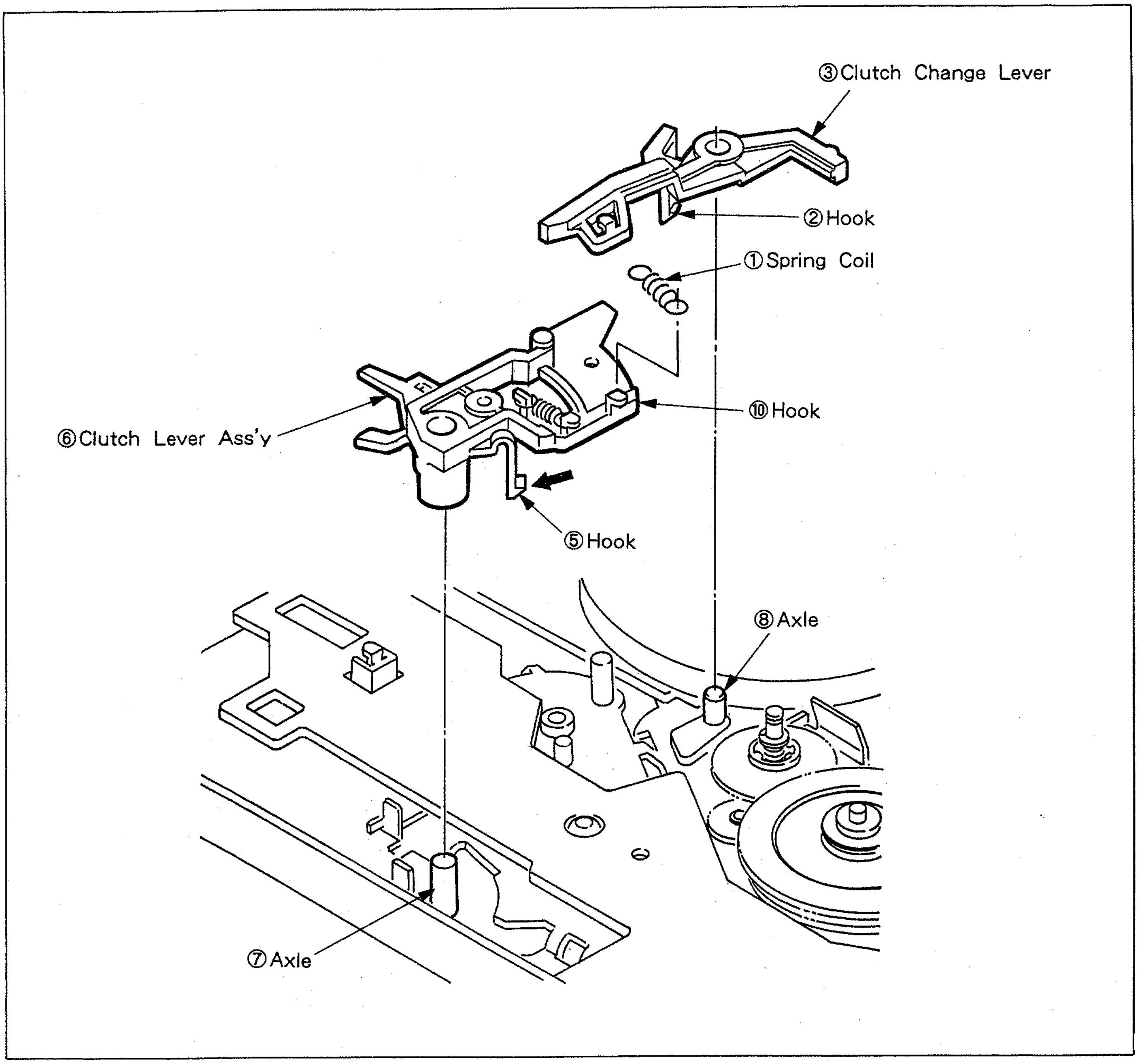


Fig. 5-8-6. Clutch Change Lever & Clutch Lever Ass'y

5-9. CAPSTAN MOTOR (See Fig. 5-9-1.)

1. Removal

1) Remove the CAPSTAN BRAKE ASS'Y as instructed in 5-7-4.
2) Remove the CAPSTAN MOTOR ⑥ connector.
3) Remove the REEL DRIVE BELT ② from the CAPSTAN MOTOR PULLEY ①.
4) Remove the two screws ④ fixing the COMPL CASSETTE MECHANISM TOP BOARD ③, then slide the TOP BOARD ③ backward.
5) Remove the three screws ⑤, then remove the CAPSTAN MOTOR ⑥.

Note : Take care not to scratch or soil the capstan axle.

2. Remounting

1) Mount the CAPSTAN MOTOR ⑥ with the three screws ⑤.
2) Connect the CAPSTAN MOTOR ⑥ connector.
3) Mount the TOP BOARD ③ with the two screws ④.
4) Fit the REEL DRIVE BELT ② around the CAPSTAN MOTOR PULLEY ① and the REEL PULLEY ⑦.
5) Mount the CAPSTAN BRAKE ASS'Y as instructed in 5-7-4.

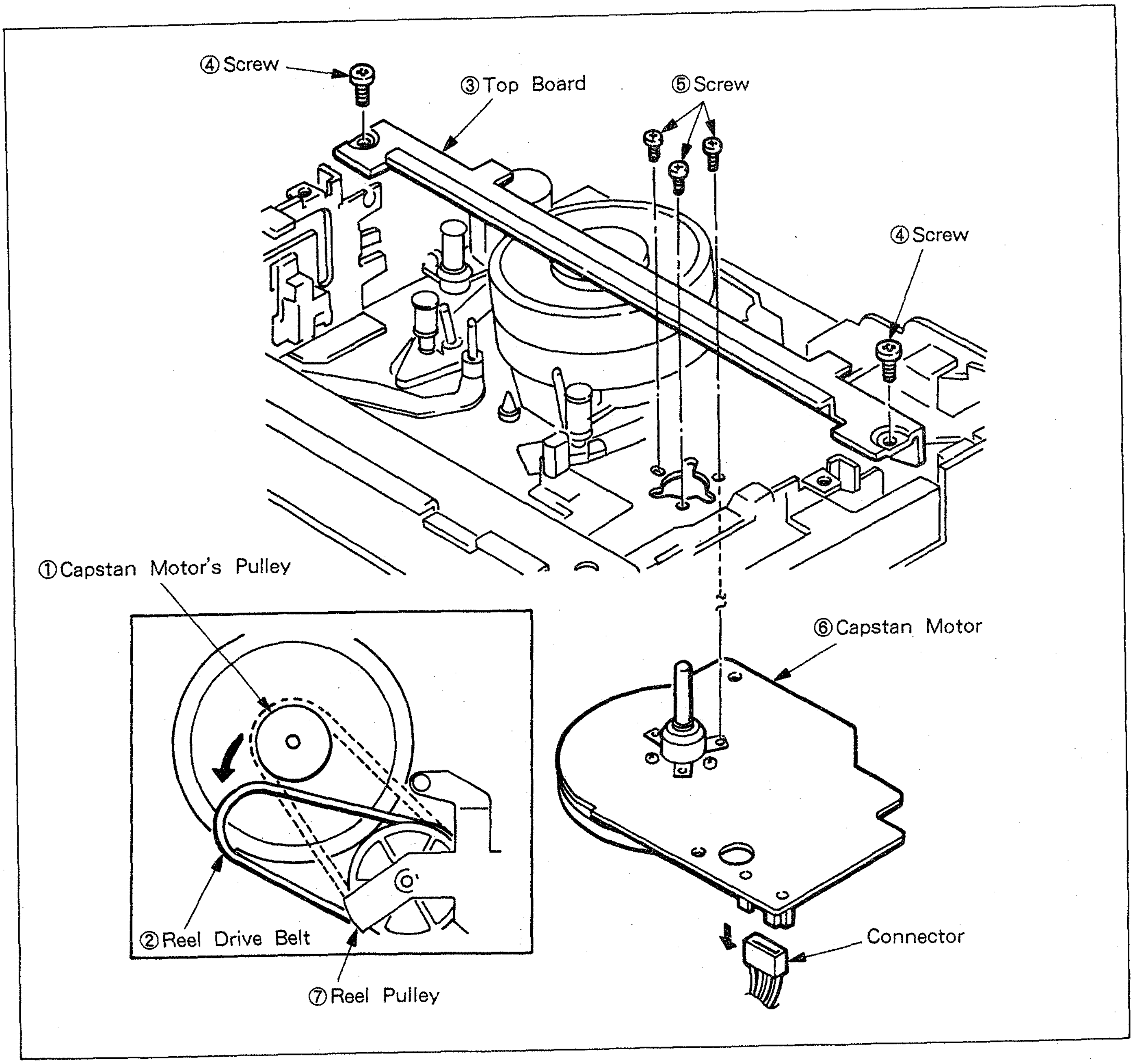

④Screw
③Top Board
⑤Screw
④Screw
①Capstan Motor's Pulley
⑥Capstan Motor
②Reel Drive Belt
Connector
⑦Reel Pulley

Fig. 5-9-1. Capstan Motor

5-10. FIXED GUIDE, FE HEAD LEVER ASS'Y

5-10-1. Entrance side Fixed Guide and FE Lever Ass'y (See Fig. 5-10-1.)

1. Removal

1) Remove the SP NUT ①, then remove the GUIDE PIPE ③ and the SP washer ② (lower), in that order.
2) Remove the SPRING COIL ⑤.
3) Remove the FTE HEAD connector.
4) Remove the special washer ⑥, then remove the FE HEAD LEVER ASS'Y ⑦.

Note : A SP washer ⑪ (upper) and a SPRING COIL ④ are sometimes inserted between the SP NUT ①and the special washer ⑥. In this case, put it back in its original position when remouting the entrance side fixed guide.

2. Remounting

1) After mounting the FE LEVER ASS'Y ⑦ onto the axle ⑧, mount the special washer ⑥.
2) Hook the SPRING COIL ⑤ between the chassis notch ⑨ and the FE LEVER ASS'Y hook ⑩.
3) Mount the SP washer ② (lower), the GUIDE pipe ③ and the SP NUT ① to the axle ⑧, in that order.
4) Connect the connector to the FTE HEAD.
5) Perform hight adjustment of the entrance side fixed guide (S) as instructed in 6-4 when remounted the SPRING COIL ④ and the SP washer ⑪ (upper).

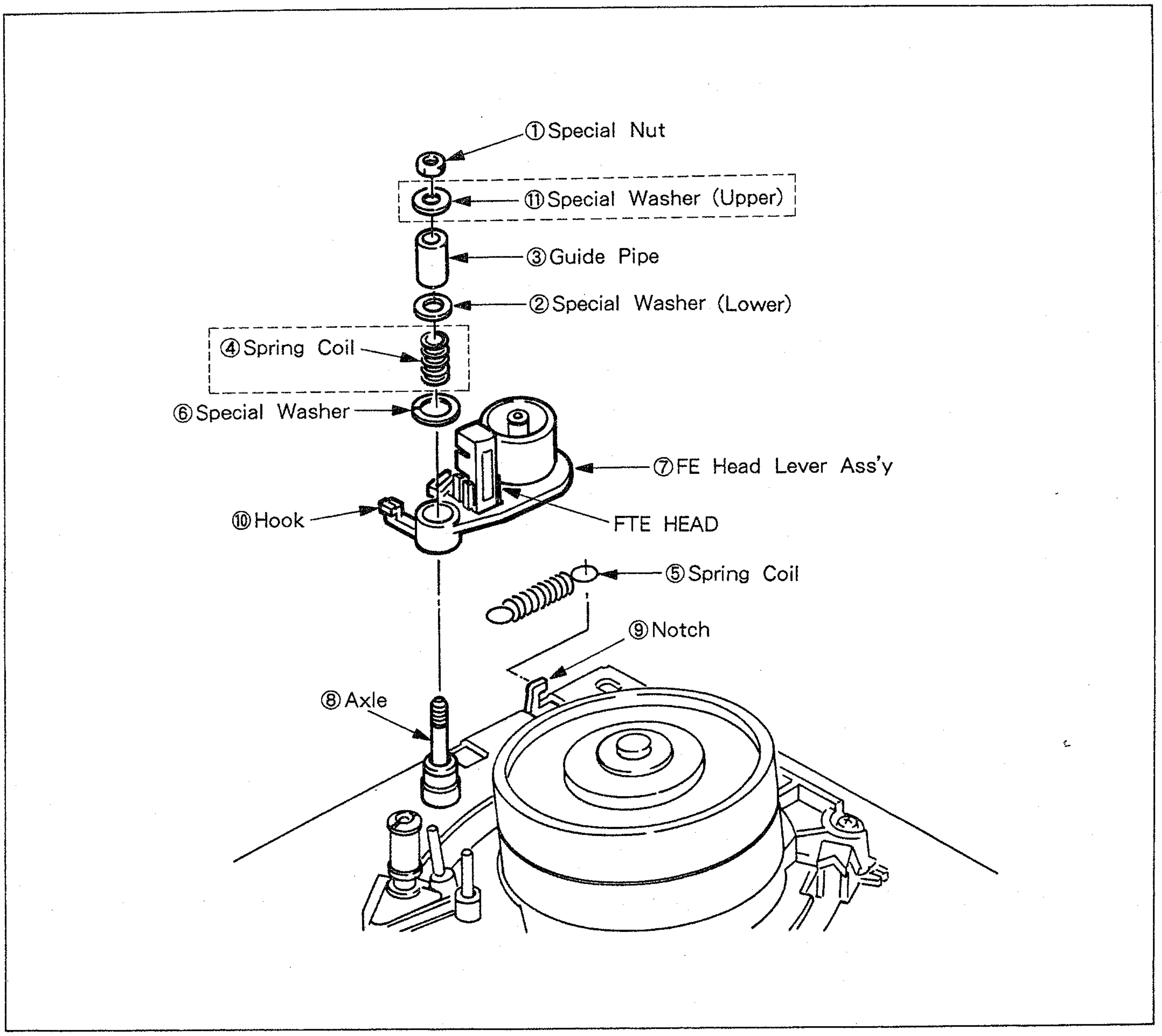

①Special Nut
⑪Special Washer (Upper)
③Guide Pipe
②Special Washer (Lower)
④Spring Coil
⑥Special Washer
⑦FE Head Lever Ass'y
⑩Hook
FTE HEAD
⑤Spring Coil
⑨Notch
⑧Axle

Fig. 5-10-1. Fixed Guide (S) & FE Lever Ass'y

5-10-2. Impedance Roller, FTE Head (See Fig. 5-10-2.)

1. Removal

1) Remove the FTE HEAD (full track erase head) ① connector.
2) Remove the special washer ②, then remove the IMPEDANCE ROLLER ③ and the washer ④.
3) Open the hook ⑤ a little and remove the FTE HEAD ①.

Note : Take care not to open the hook too much, otherwise it may be deformed or broken.

2. Remounting

1) Mount the FTE HEAD ① onto the FE HEAD LEVER ASS'Y ⑥. Confirm that the hook ⑤ is hooked to the FTE HEAD ①.
2) Mount the washer ④ and the IMPEDANCE ROLLER ③, in that order, onto the axle ⑦, then mount the special washer ②.
3) Connect the connector to the terminal of the FTE HEAD ①.

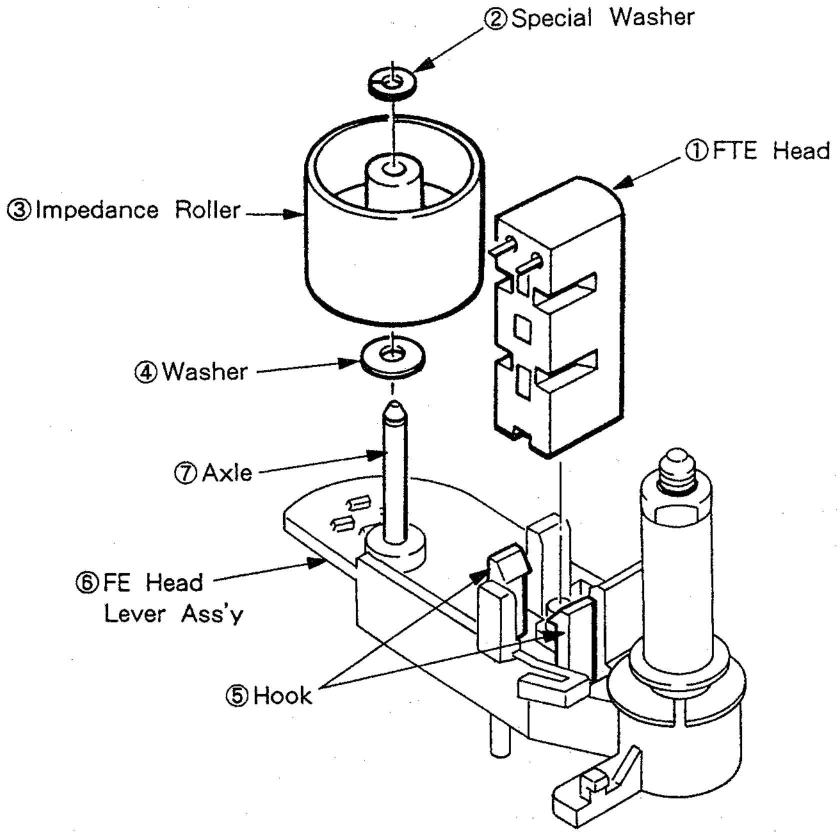

②Special Washer
①FTE Head
③Impedance Roller
④Washer
⑦Axle
⑥FE Head Lever Ass'y
⑤Hook

Fig. 5-10-2. Impedance Roller & FTE Head

5-10-3. Exit side Fixed Guide (See Fig. 5-10-3.)

1. Removal

1) Remove the CAP ①.
2) Remove the SP NUT ②, then remove the SP washer ③ (upper), the GUIDE PIPE ④, the SP washer ③ (lower) and the SPRING COIL ⑤, in that order.

2. Remounting

1) Mount the SPRING COIL ⑤, the SP washer ③ (lower), the GUIDE PIPE ④, the SP washer ③ (upper) and the SP NUT ②, in that order, to the axle ⑥.
2) Mount the CAP ① onto the axle ⑥.
3) Perform height adjustment of the fixed guide (T) as instructed in 6-4.

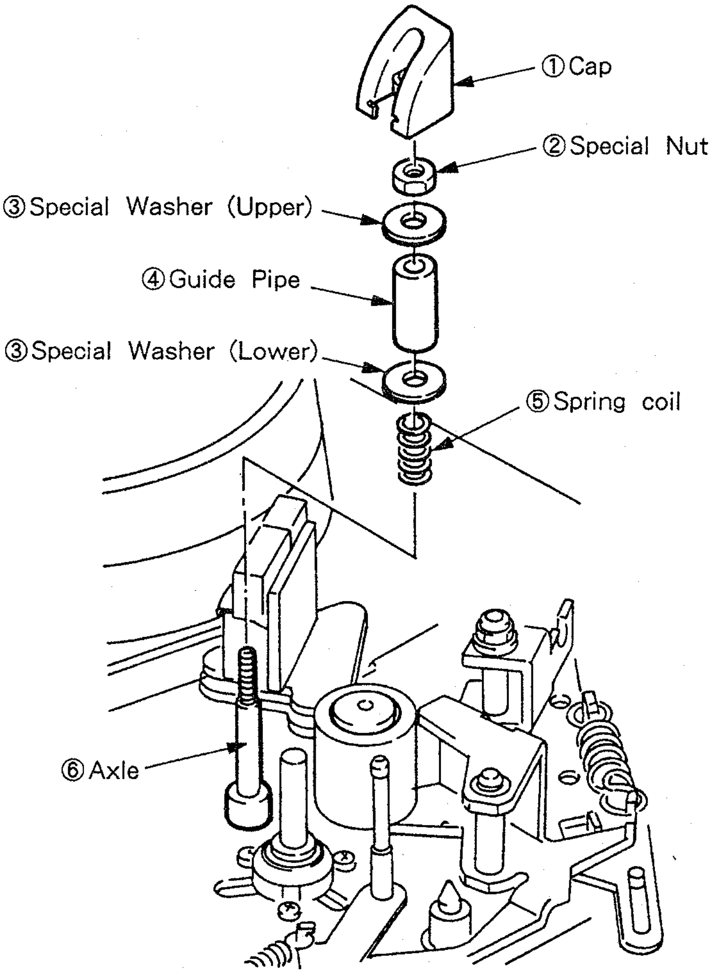

①Cap
②Special Nut
③Special Washer (Upper)
④Guide Pipe
③Special Washer (Lower)
⑤Spring coil
⑥Axle

Fig. 5-10-3. Fixed Guide (T)

5-11. DRUM SECTION

5-11-1. Drum Motor (rotor, stator) (See Fig. 5-11-1.)

1. Removal

1) Remove the screw ①, then remove the CYLINDER EARTH ASS'Y ②.
2) Remove the two screws ③, then remove the ROTOR ④ and SPACER.
3) Remove the STATOR board connector ⑩.
4) Remove the three screws ⑤, then remove the STATOR ⑥.

2. Remounting

1) Mount the STATOR ⑥ with the three screws ⑤.
2) Mount the SPACER ⑪ on to the AXLE ⑫.
3) While aligning the ROTOR oval hole ⑦ with the ROTOR DISK hole ⑧, mount the ROTOR with the two screws ③.
4) Insert the connector ⑩.
5) While aligning the CYLINDER EARTH ASS'Y ② protuberance with the chassis hole ⑨, mount it with the screw ①.

Note 1 : Use a torque driver (VHJ-0014) for mounting the STATOR ⑥ and the ROTOR ④. Set fastening torque to 3kg-cm.

Note 2 : When the drum unit has been replaced, perform a tape path adjustment as instructed in 6-4. and perform a CH-1/CH-2 switching position adjustment of the servo circuit.

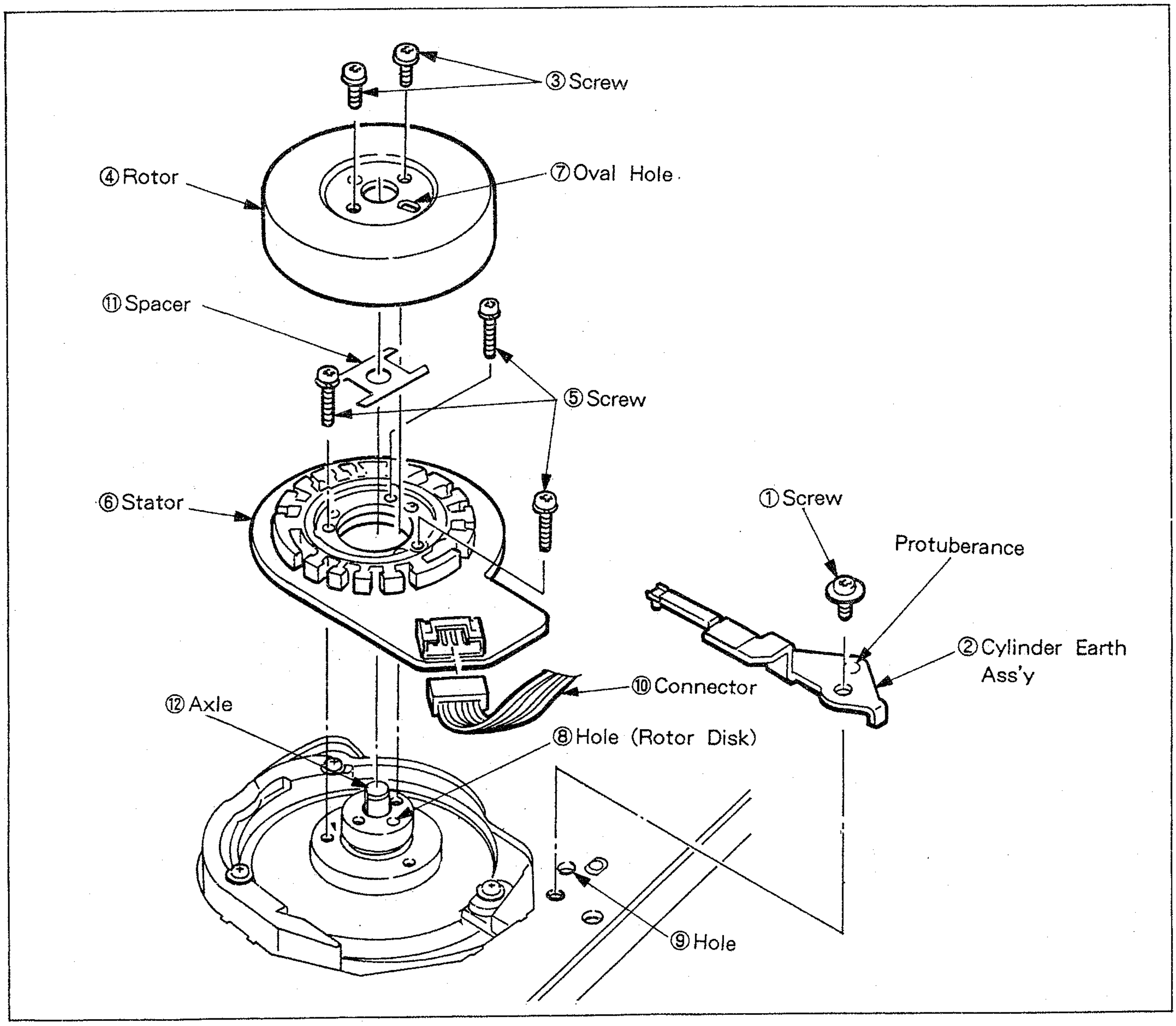

③Screw
④Rotor
⑦Oval Hole
⑪Spacer
⑤Screw
⑥Stator
①Screw
Protuberance
②Cylinder Earth Ass'y
⑩Connector
⑫Axle
⑧Hole (Rotor Disk)
⑨Hole

Fig. 5-11-1. Drum Motor

5-11-2. Drum Unit (See Fig. 5-11-2.)

1. Removal

1) For some models with the board located above the upper drum, remove the board.
2) Remove the flexible P.C.B. ① from the PRE-AMP UNIT (take care not to pull the flexible P.C.B. in the upward direction).
3) Remove the LOAD RACK only, as instructed in 5-4-1.
4) Remove the three screws ②, then remove the drum unit ③.

   NOTE : When removing and remounting the drum unit, handle it carefully to protect it from scratches and dirt.

2. Remounting

1) While aligning the drum unit ③ to the protuberance, mount it to the drum base (CYLINDER BASE) ⑤ with the three screws ②.
2) Mount the ROAD RACK as instructed in 5-4-1.
3) Insert the flexible P.C.B. into the PRE-AMP UNIT.
4) Clean the drum unit.
5) Perform the tape path adjustment as instructed in 6-4. and perform the CH-1／CH-2 switching position adjustment of the servo circuit.

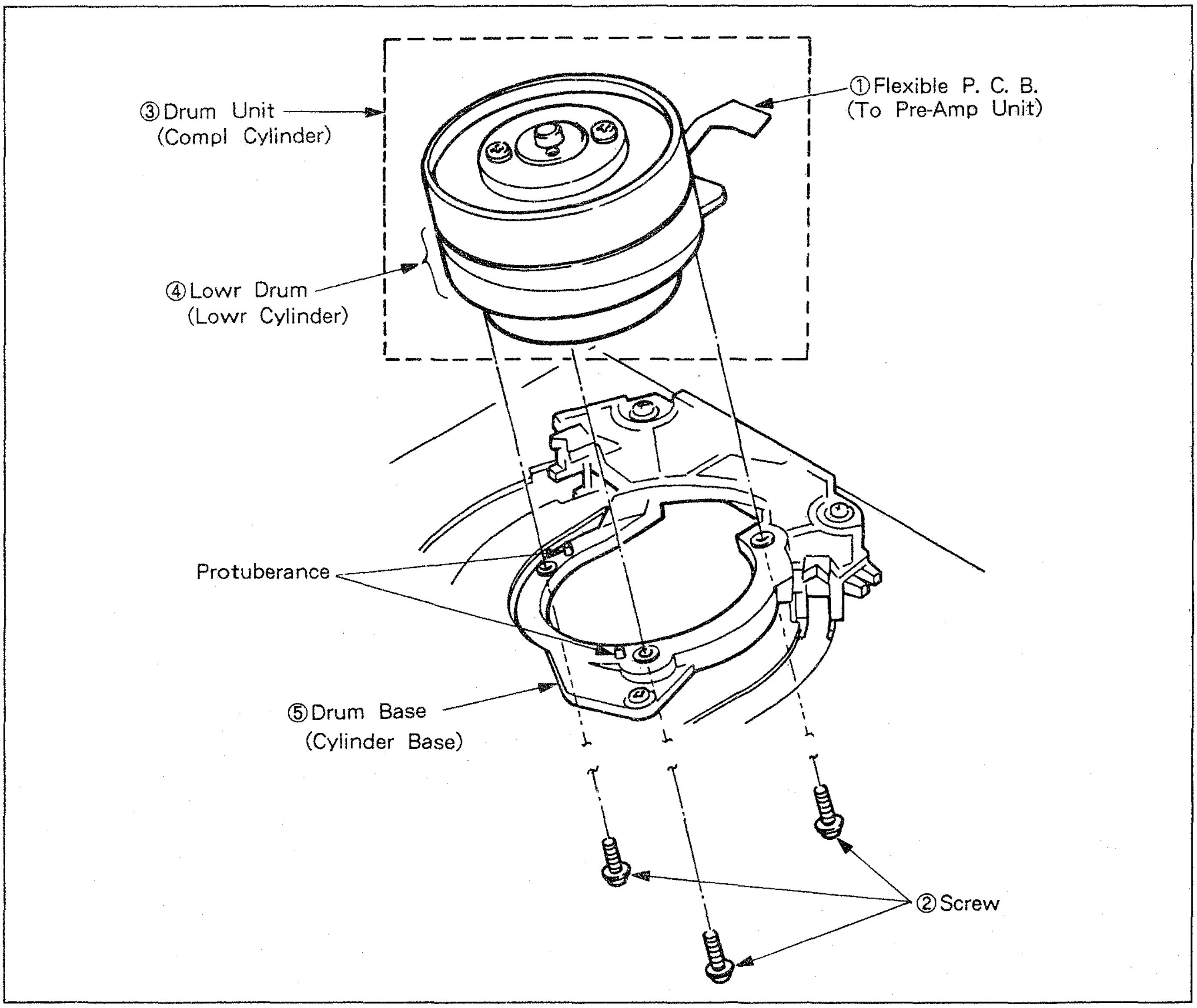

③Drum Unit
(Compl Cylinder)
①Flexible P. C. B.
(To Pre-Amp Unit)
④Lowr Drum
(Lowr Cylinder)
Protuberance
⑤Drum Base
(Cylinder Base)
②Screw

Fig. 5-11-2 Drum Unit (Compl Cylinder)

5-11-3. Upper Drum (Upper Cylinder)

1. Removal

1) Remove the two screws ① (see Fig. 5-11-3).
2) In case the RE (ROTARY ERASE) HEAD is attached to the upper drum (UPPER CYLINDER), remove the lead wires soldered from the P.C. board (see Fig. 5-11-4.).
3) Turn the head removing jig (VHJ-0041) handle ② counterclockwise to lift up the stopper ③ (see Fig. 5-11-5.).
4) Insert the two long screws ④ of the jig into the screw holes ⑥ located on the head chip side of the upper drum (UPPER CYLINDER) ⑤, then mount by turning the handle clockwise.
5) While holding the jig so that the upper drum ⑤ does not rotate, turn the handle ② clockwise to remove the upper drum.
6) Remove the jig from the upper drum.

Note : Handle parts carefully to protect the drum from scratches and dirt, and the video head from damage.

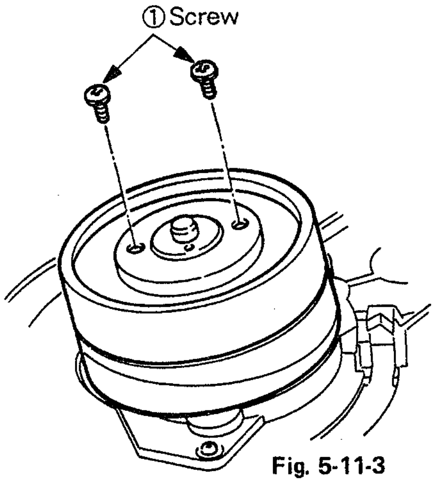


Fig. 5-11-3

Lead wires of
Rotary Erase Head (Model for flying
erase capability)

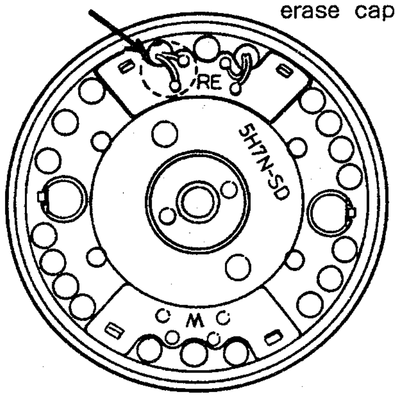

RE
5H7N-SD
C M C

Fig. 5-11-4

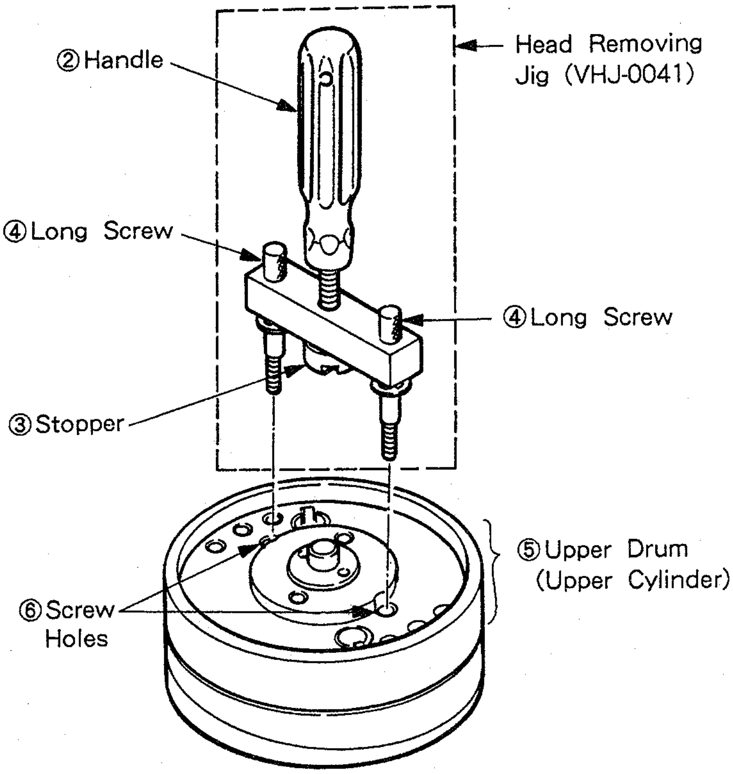

②Handle
Head Removing Jig (VHJ-0041)
④Long Screw
④Long Screw
③Stopper
⑤Upper Drum (Upper Cylinder)
⑥Screw Holes

Fig. 5-11-5

Upper Drum (Upper Cylinder)

2. Remounting (See Fig. 5-11-6.)

1) Confirm that surfaces where the flywheel and the upper drum (UPPER CYLINDER) are engaged or make contact portion are free from scratches and dirt.
2) The code name ① of the drum is printed on the video head side of the upper drum ⑤ SP CH-1 (channel A, plus azimuth). The code name ① is set with in the rotary transformer terminal round hole side ② position of lower drum (LOWER CYLINDER), so that the two screw holes ③ of the upper drum are aligned with the two screw holes ④ of the flywheel. (Refer to 3. Recognizing the SP CH-1 Head side).
3) In case the RE (ROTARY ERASE) HEAD is attached to the upper drum, pass the lead wires through the lead wire hole. (See Fig.5-11-4.)
4) While keeping the upper drum ⑤ parallel to the lower drum (LOWER CYLINDER) ⑧, insert it completely into the flywheel.
5) Temporarily tighten the two screws ⑦ alternately a little at a time, then tighten them to a torque of 6kg-cm using a torque driver (VHJ-0014) and a 3mm bit (VHJ-0045).
6) In case the RE head is attached to the upper drum ⑤, solder the lead wires to the P.C. board. Solder the red lead wire to the R terminal, and the yellow lead wire to the Y terminal.

Note : When the upper drum has been replaced, perform a tape path adjustment as instructed in 6-4. and CH-1/CH-2 switching position adjustment of the servo circuit.

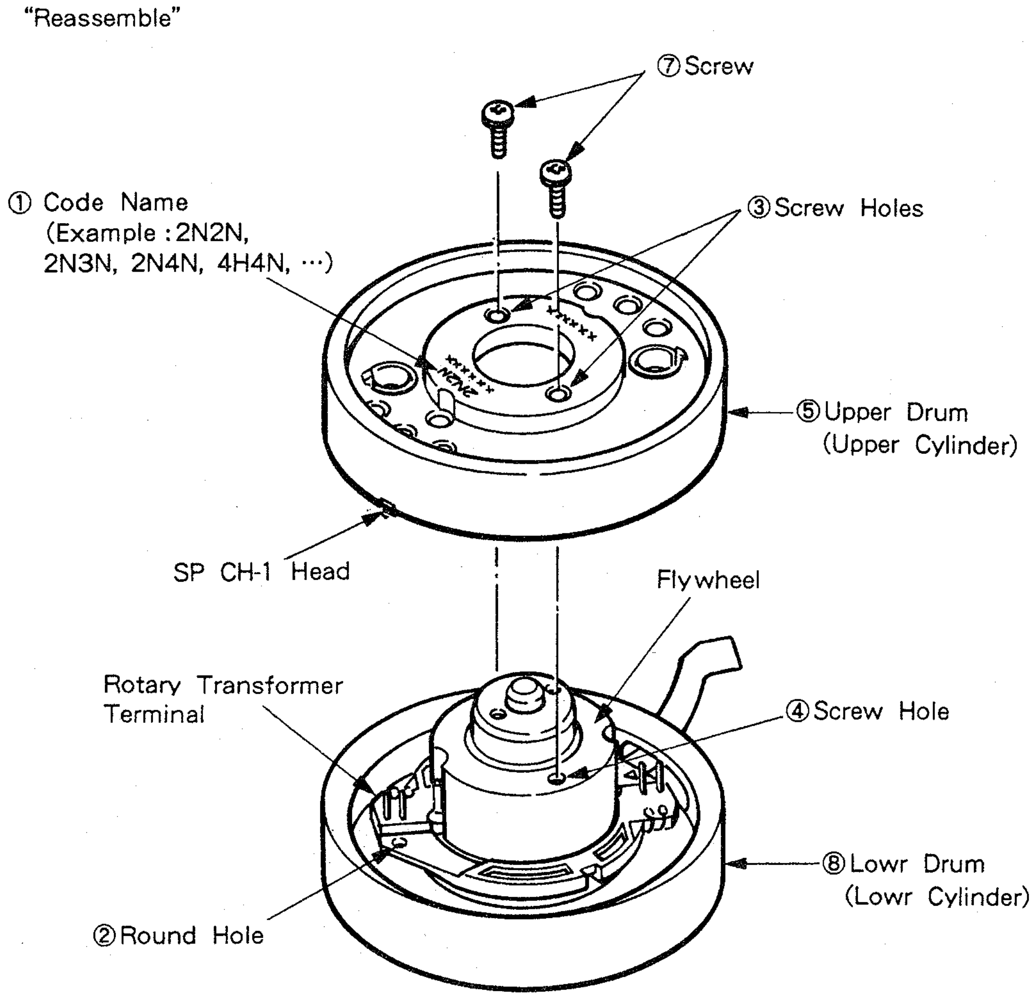

"Reassemble"
⑦Screw
① Code Name (Example : 2N2N, 2N3N, 2N4N, 4H4N, ···)
③Screw Holes
⑤Upper Drum (Upper Cylinder)
SP CH-1 Head
Flywheel
Rotary Transformer Terminal
④Screw Hole
⑧Lowr Drum (Lowr Cylinder)
②Round Hole

Fig. 5-11-6.

3. **Recognizing the SP CH-1 Head Side**

No playback picture can be obtained if the video head is not wired as a pair with the rotary transformer located inside the lower drum rotating section. Therefore, mounting position should be matched when mounting the upper drum. In the P90 mechanism series, the code name of the drum is printed on the SP CH-1 (CH-A, plus azimuth) side as a mark for mounting the upper drum. (See Fig. 5-11-7.) This code name differs according to the drum type, but its basic form is as follows :

Code Name Form
④Ⓗ④Ⓟ-ⒹⓈ
A B C D E F

A = Number of head bases
B = "N" for normal audio
"H" for HI-FI audio
C = Number of heads
D = TV system ("N" or "P")
EF = Code for detailed classification. Depending on drum type, it can also be just one character, or a blank space.

Examples of Detailed Classification Codes
V = Head with level difference
D = Compatible with digital units
S = SVHS-compatible

Examples of Code Names
2N2P, 2N2P-L, 2N2P-V, 2N2P-D, 2N3P, 2N4P, 4H4P, 4H4P-D

Moreover, there is a round hole with marking purposes on the SP CH-1 (CH-A, plus azimuth) side of the lower drum rotary transformer terminal. As shown in Fig. 5-11-8, there are two types of rotary transformer terminals (the number of pins differs according to the number of heads).

Note : When ordering parts such as drums (CYLINDERS), do not use the code names; always refer to the parts list and order with the specified part numbers.

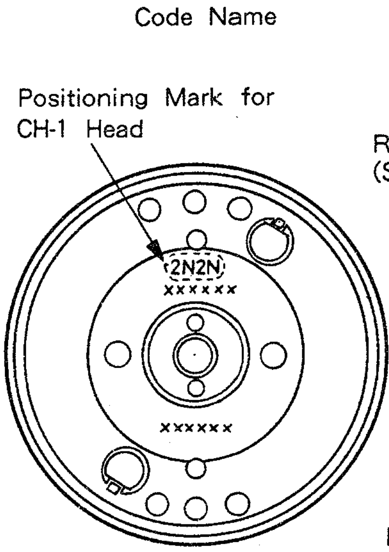

Code Name
Positioning Mark for CH-1 Head
2N2N
xxxxxx
xxxxxx

Fig. 5-11-7. Upper Drum

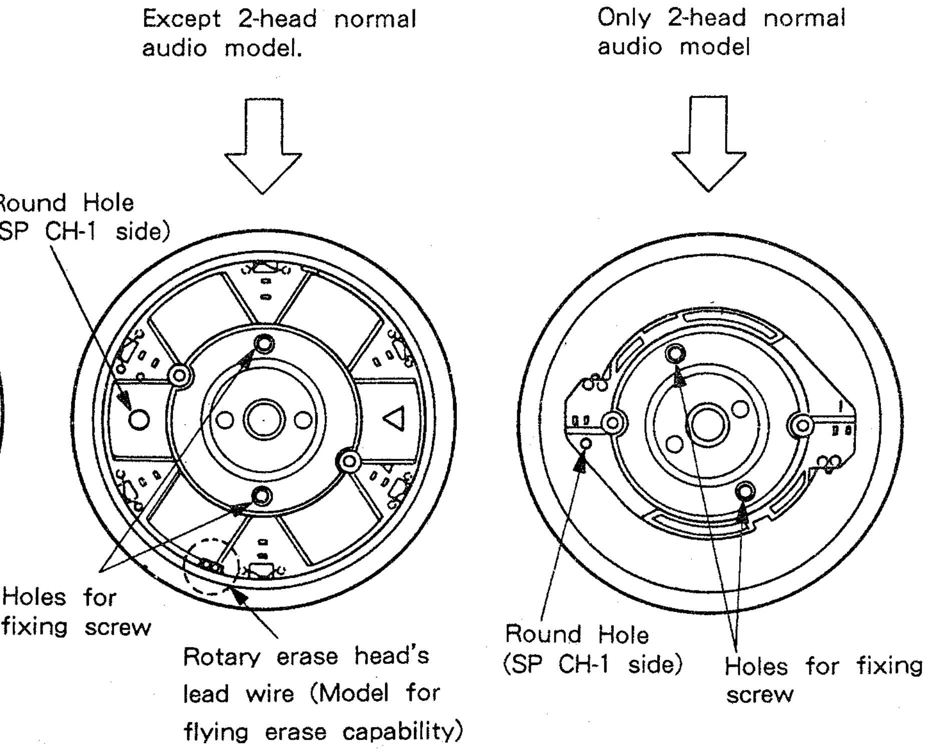
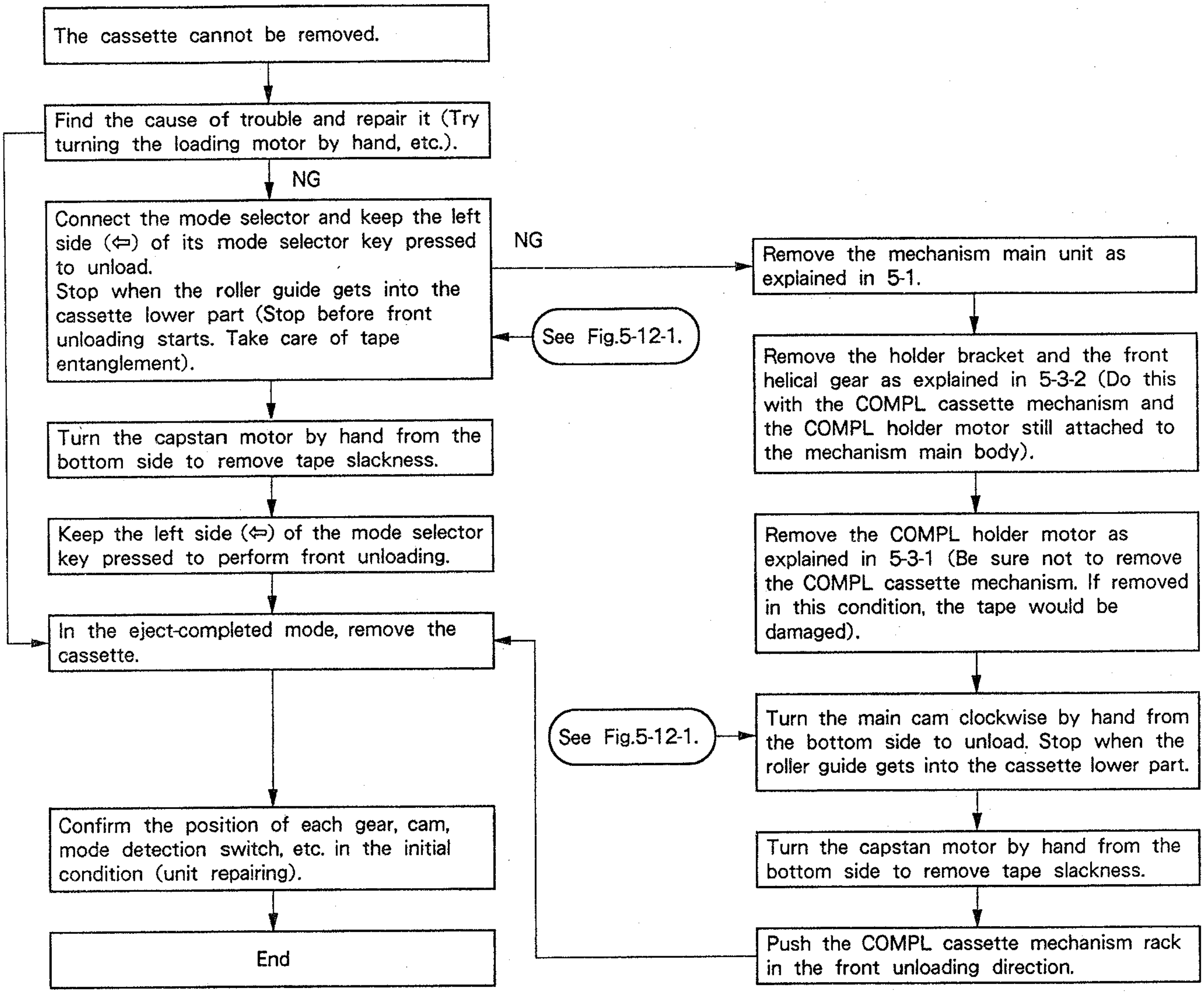

Except 2-head normal audio model.
Only 2-head normal audio model
Round Hole (SP CH-1 side)
Holes for fixing screw
Rotary erase head's lead wire (Model for flying erase capability)
Round Hole (SP CH-1 side)
Holes for fixing screw

Fig. 5-11-8. Lower Drum

5-12. HOW TO PROCEED WHEN THE CASSETTE CANNOT BE REMOVED



The cassette cannot be removed.

Find the cause of trouble and repair it (Try turning the loading motor by hand, etc.).

Connect the mode selector and keep the left side (⇦) of its mode selector key pressed to unload.
Stop when the roller guide gets into the cassette lower part (Stop before front unloading starts. Take care of tape entanglement).

Turn the capstan motor by hand from the bottom side to remove tape slackness.

Keep the left side (⇦) of the mode selector key pressed to perform front unloading.

In the eject-completed mode, remove the cassette.

Confirm the position of each gear, cam, mode detection switch, etc. in the initial condition (unit repairing).

End

Remove the mechanism main unit as explained in 5-1.

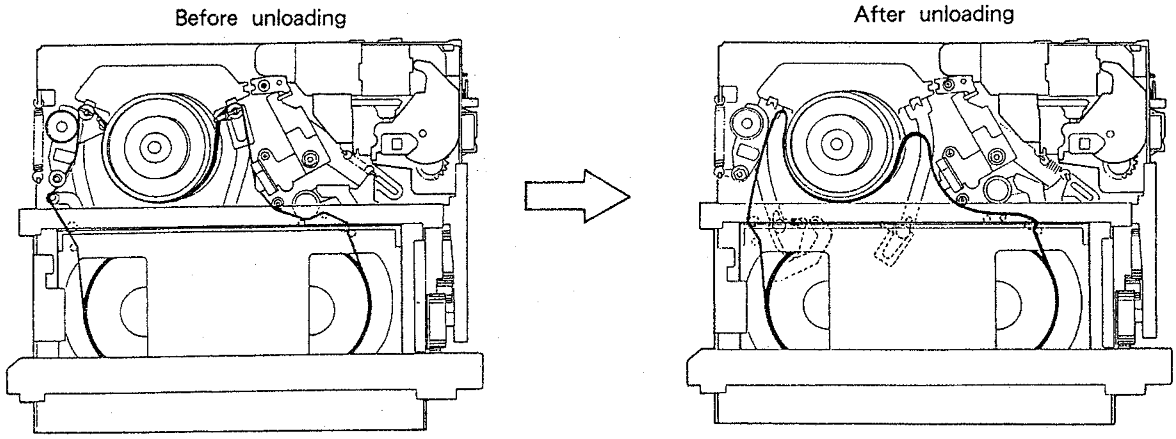
Remove the holder bracket and the front helical gear as explained in 5-3-2 (Do this with the COMPL cassette mechanism and the COMPL holder motor still attached to the mechanism main body).

Remove the COMPL holder motor as explained in 5-3-1 (Be sure not to remove the COMPL cassette mechanism. If removed in this condition, the tape would be damaged).

Turn the main cam clockwise by hand from the bottom side to unload. Stop when the roller guide gets into the cassette lower part.

Turn the capstan motor by hand from the bottom side to remove tape slackness.

Push the COMPL cassette mechanism rack in the front unloading direction.



Before unloading

After unloading

Perform unloading using the mode selector.

First rotate the capstan motor by hand from the bottom to take-up the tape slack, and perform front-unloading using the mode selector.

Fig. 5-12-1

6. MECHANISM ADJUSTMENT

6-1. OPERATING THE MECHANISM WITH NO CASSETTE INSERTED (See Fig. 6-1-1.)

1) Attach black vinyl tape to the T. END and T. TOP sensors to prevent light from entering.
2) Push the TRAY LOCK LEVER in the direction of the arrow to maintain the unlocked condition. Release the lever just before the TRAY starts moving down.
3) In this condition, operation is possible in every mode. However, the following procedures are necessary to operate the unit in the REC, REW and R-SEARCH modes.

REC mode :	Push the SAFETY SW LEVER to turn the SAFETY SWITCH (Erasure Prevention Switch) ON, then press the REC button. If the SAFETY SWITCH is not turned ON, the unit will enter the EJECT mode.
REW/R-SEARCH :	After pressing the REW button, turn the TAKE-UP REEL ASS'Y by hand. Otherwise, the reel sensor will operate, setting the INITIAL mode after 2 to 3 seconds.

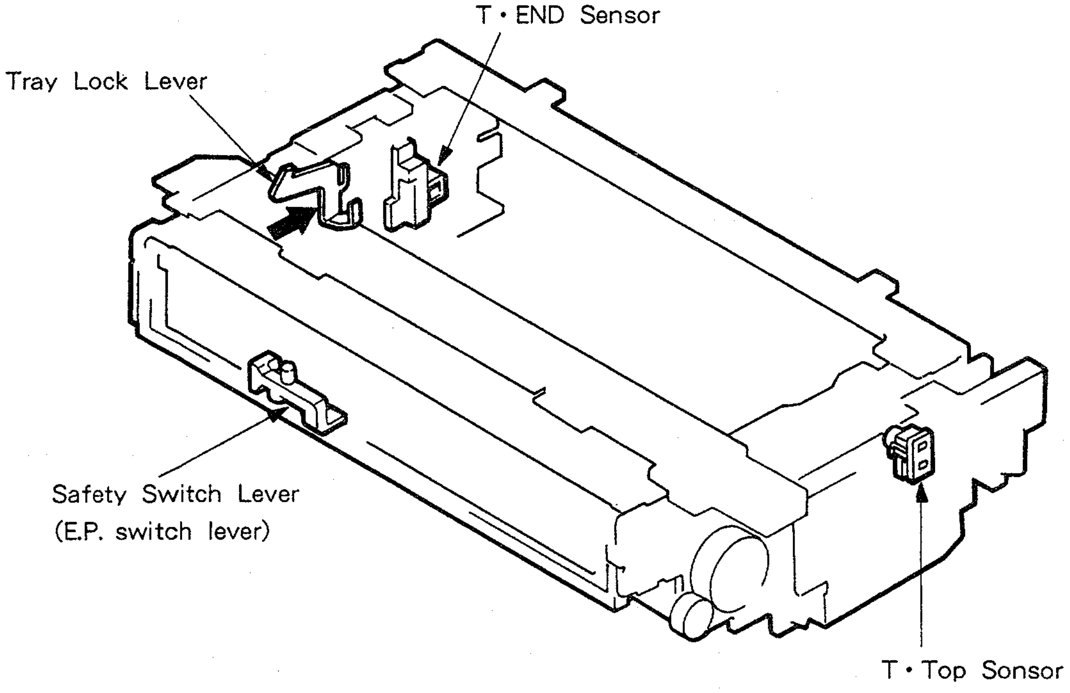


Fig. 6-1-1. Preparations for Adjustment

6-2. REEL TABLE HEIGHT ADJUSTMENT AND TORQUE CHECK

6-2-1. Reel Table Height (See Fig. 6-2-1.)

If the SUPPLY REEL ASS'Y or the TAKE-UP REEL ASS'Y is replaced, it will be necessary to adjust the REEL TABLE height.

(1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
(2) Attach the cassette stand plate gauge (VHJ-0001) and slide the gauge in the direction of the arrows.
(3) Confirm that, when the gauge stops, the REEL TABLEs are not in contact with surface A of the plate and are in contact with surface B.
(4) If the REEL TABLE is in contact with surface A, remove a spacer and check again.
(5) If the REEL TABLE is not in contact with surface B, add a spacer and check again.
(6) Remove the cassette stand plate gauge.
(7) Set the EJECT mode with the mode selector.
(8) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

Note :

- Adjust the reel table height by adding or removing spacers (0.13t, 0.25t, 0.3t, 0.4t and 0.5t) as appropriate so that the height meets the specifications. Use the same method for both the TAKE-UP REEL TABLE and the SUPPLY REEL TABLE.
  (The 0.5t washer is included as the standard washer for the SUPPLY REEL ASS'Y. The 0.4t washer is included as the standard washer for the TAKE-UP REEL ASS'Y.)
- If the height of the reel table is not within the specified value, the tape edge might be damaged as a result, or the tape path adjustment might not be possible to make.

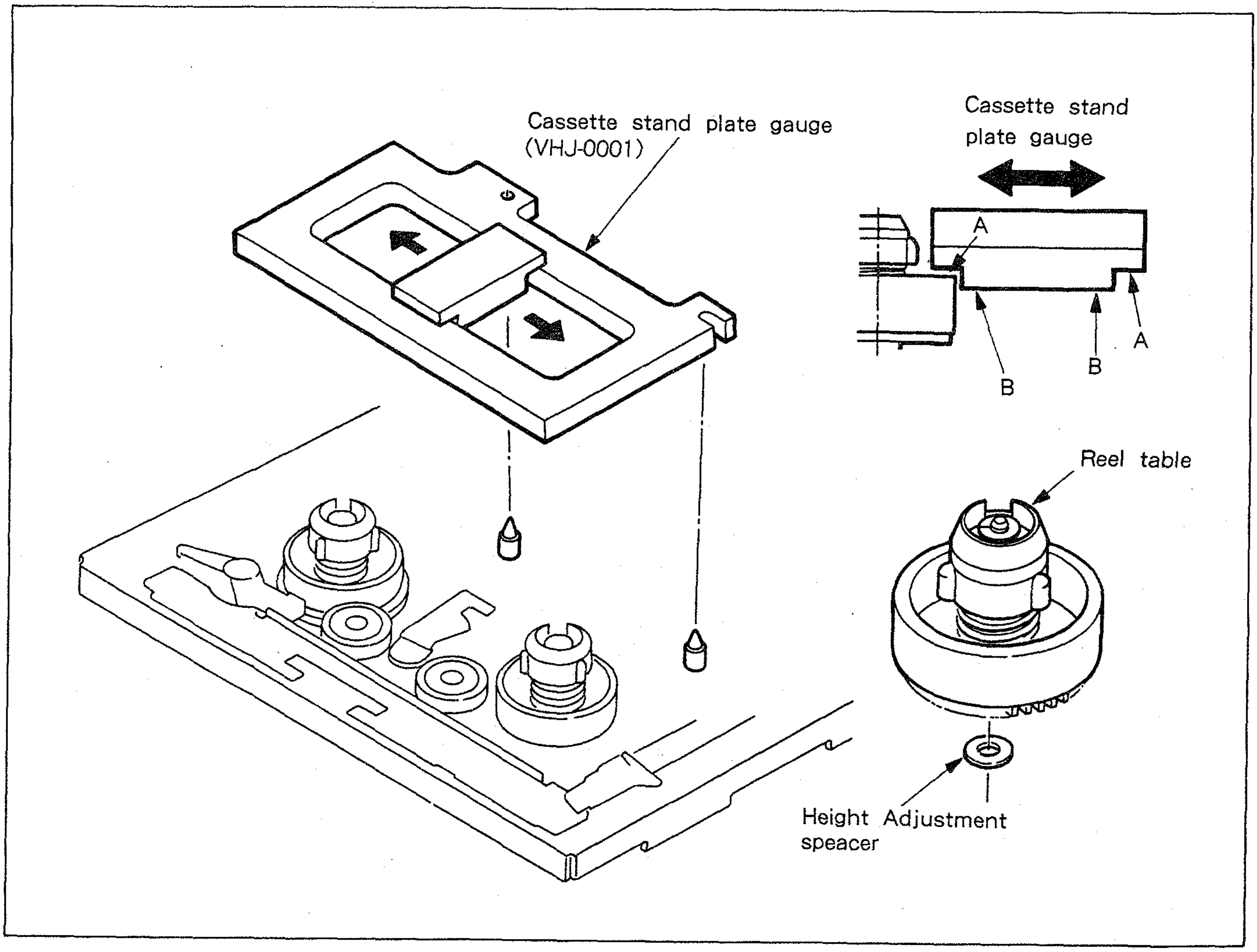

Cassette stand plate gauge (VHJ-0001)
Cassette stand plate gauge
A
A
B
B
Reel table
Height Adjustment speacer

Fig. 6-2-1 . Reel Table Height Adjustment

6-2-2. Torque Check (See Fig. 6-2-2.)

1) Set the unit to operating condition without a cassette inserted as instructed in 6-1.
2) Measure the SUPPLY REEL TABLE torque in the REW mode, and confirm that it is 750gcm or more. Perform this measurement keeping the torque gauge in a fixed position with your hand (locked torque).
3) Measure the TAKE-UP REEL TABLE torque in the F.FWD mode, and confirm that it is 600gcm or more (locked torque).
4) Measure the TAKE-UP REEL TABLE torque in the playback mode (SP tape speed), and confirm that it is within 100 through 160gcm (locked torque).
5) Measure the SUPPLY REEL TABLE torque in the REV (F-SEARCH) mode, and confirm that it is within 150 through 240 gcm (locked torque).
6) After confirming that torque readings are within the specifications for each mode, check the following :
   - ⓐ Dirt on the capstan motor and the REEL PULLEY groove.
   - ⓑ Deterioration of the REEL DRIVE BELT.
   - ⓒ Deterioration of the FRICTION GEAR ASS'Y felt (torque during playback).
   - ⓓ Wear and damage of the COMPL CLUTCH MECHANISM and the reel drive system gears.

Note1 : Items ⓑ, ⓒ and ⓓ require replacement if found defective.

Note2 : The measured value of torque during FF and REW represents the value 2 seconds after starting.

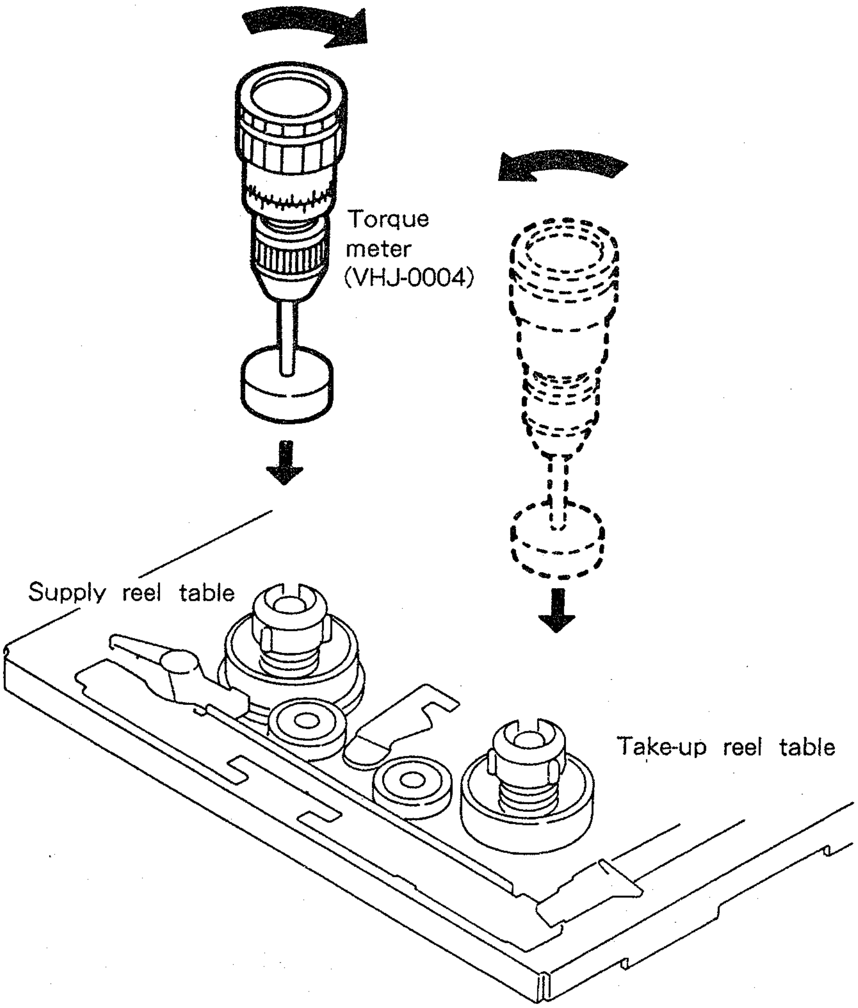


Fig. 6-2-2 Checking REW/FF/PLAY Torque

6-3. TENSION POLE (BACK TENSION GUIDE) POSITION ADJUSTMENT AND BACK TENSION TORQUE CHECK

6-3-1. Tension Pole (Back Tension Guide) Position Adjustment (See Fig. 6-3-1.)

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Set the PLAY mode with the mode selector (VHJ-0050).
3) Attach the position adjustment gauge (VHJ-0049) ①.
4) Confirm that the tension pole ② is within the position adjustment gauge frame.
5) In case the tension pole is not within the above-mentioned frame, adjust it by loosening the screw ④ a little and changing the mounting position of the BAND HOLDER ⑤ in the direction of the arrow Ⓐ.
6) Remove the position adjustment gauge ①.
7) Set the EJECT mode with the mode selector.
8) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
9) Confirm that back tension torque is within 50 ± 10gcm, as instructed in 6-3-2 below.

6-3-2. Back Tension Torque Check (See Fig. 6-3-1.)

1) Attach the cassette torquemeter (VHJ-0016) and set the PLAY mode.
2) Confirm that back tension torque is within 47 ± 5gcm.
3) In case back tension torque does not meet the above specification, proceed as follows:

ⓐ Clean the portion where the brake band (BAND HOLDER ASS'Y) ⑦ of the SUPPLY REEL ASS'Y ⑥ makes contact.

ⓑ Confirm that the brake band of the BAND HOLDER ASS'Y ⑦ does not make wear and that it is clean. If wear or dirt is found, replace the band holder assembly ⑦ as instructed in 5-7-3.

ⓒ Replace the TENSION LEVER ASS'Y SPRING COIL ⑧.

Note : Always follow procedures in 6-3-1. Tension Pole Position Adjustment after performing ⓐ, ⓑ and ⓒ.

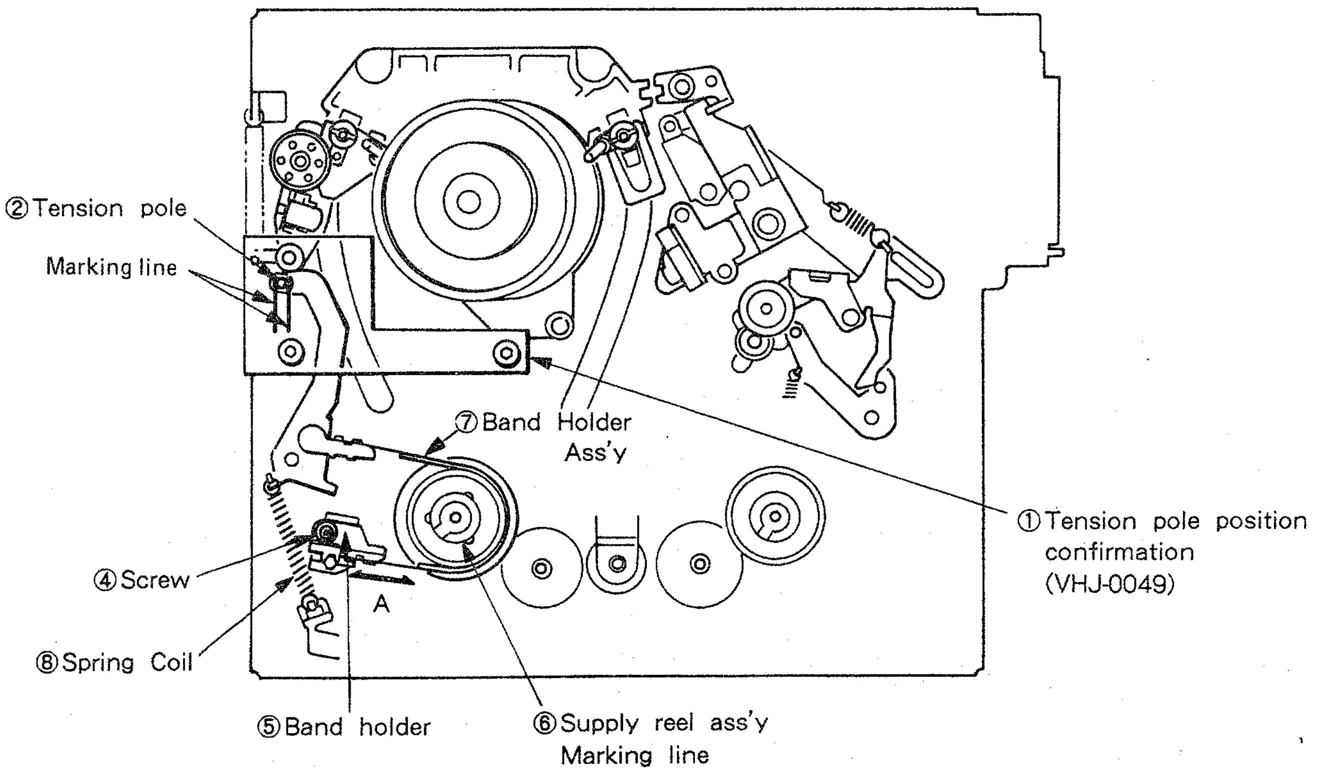

②Tension pole
Marking line
⑦Band Holder Ass'y
①Tension pole position confirmation (VHJ-0049)
④Screw
A
⑧Spring Coil
⑤Band holder
⑥Supply reel ass'y Marking line

Fig. 6-3-1. Tension Pole Positioning Adjustment

6-4. TAPE PATH ADJUSTMENT

The tape path mechanism is precisely adjusted at the factory. Normally no readjustment is required, but checking and/or adjustment is necessary when parts of the tape path mechanism among those shown in the figure below (See Fig. 6-4-1.) have been removed or replaced after a long period of use.
This operation consists of adjusting the various guides so that the tape drawn out from the supply reel runs smoothly along the DRUM (CYLINDER) lead surface. A way of grasping the tape path condition by electronic means is monitoring the video head output envelope waveform with an oscilloscope. However, the fact that visual observation is essential in order to know whether the tape is running through the various guides in a smooth and natural way should be kept in mind when checking and adjusting.
Also remember that the position of tape guides is not greatly affected by the replacement of the UPPER DRUM (UPPER CYLINDER) or the COMPL DRUM (COMPL CYLINDER), provided that it is correctly performed, and that only the replaced parts should be adjusted after replacing a tape guide or COMPL HEAD BRACKET, since the position of the other tape guides shall not change considerably.

6-4-1. Preparations for Adjustment

(1) Clean the tape transport surfaces (See Fig. 6-4-1.).
(2) Connect the oscilloscope. Connect the channel 1 probe to the envelope waveform test point, and the channel 2 probe to the SW30 (RF SW P) test point. During adjustment, apply a trigger to the low side of the SW30 (RF SW P) in order to monitor the waveform output from channel 1 of the video head.

Note : Since oscilloscope connection points differ according to the model, refer to the "Test Point for Tape Path Adjustment" allocation figure in the electric circuit adjustment section of the service manual book.

(3) Use a dentist's mirror for visual observation of tape path condition.
(4) Use a nut box (VHJ-0048) for adjustment of the fixed guides.
(5) Use an eccentric driver (VHJ - 0003) for adjustment of the guide rollers.
(6) When adjusting height of the fixed guide, guide rollers or COMPL head bracket, turn the special nut or the upper flange clockwise to push the tape downward, and counterclockwise to make the tape rise up.
(7) Do not use the damaged cassette tapes for tape path adjustment.

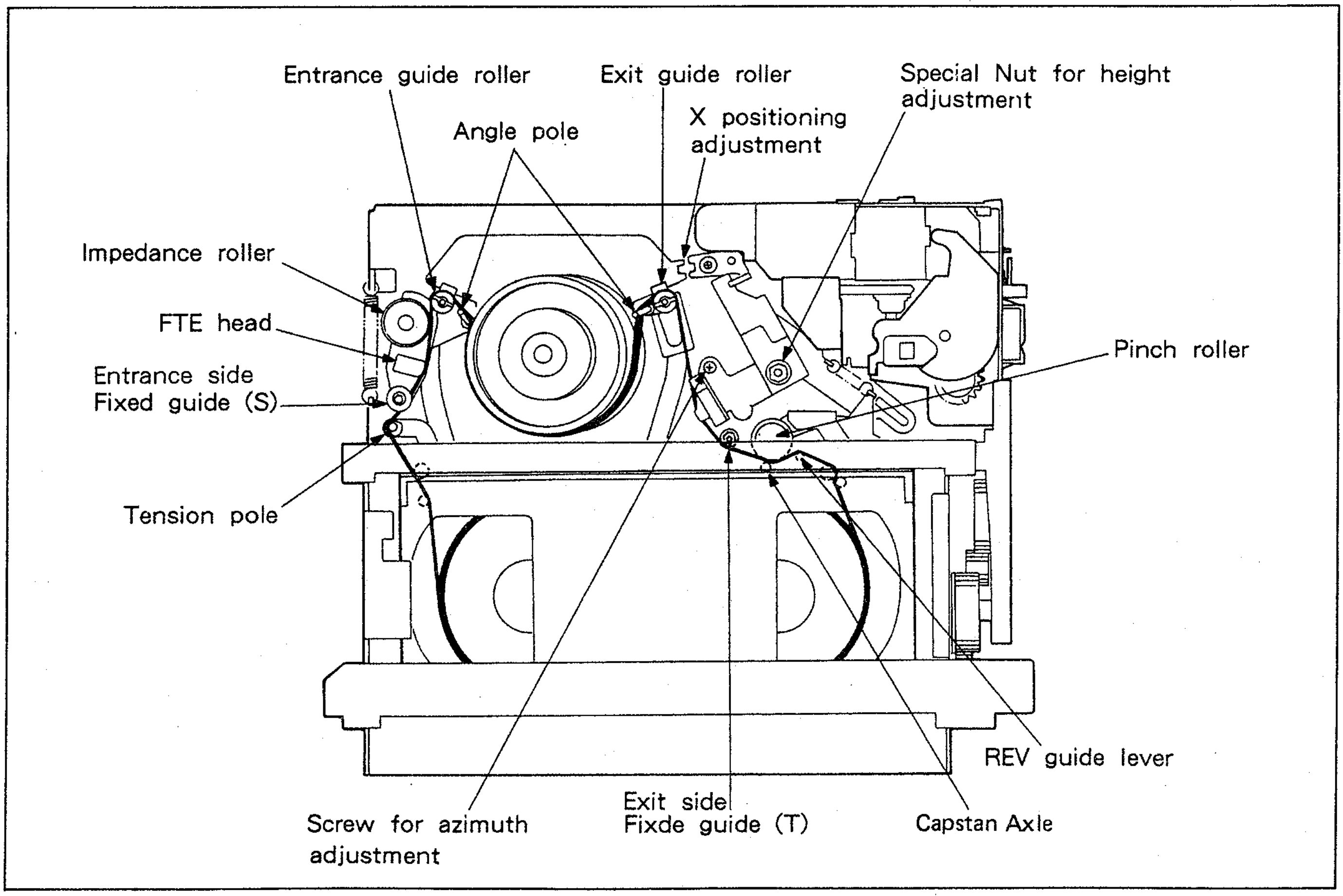

Entrance guide roller
Exit guide roller
Special Nut for height adjustment
Angle pole
X positioning adjustment
Impedance roller
FTE head
Entrance side Fixed guide (S)
Pinch roller
Tension pole
REV guide lever
Screw for azimuth adjustment
Exit side Fixde guide (T)
Capstan Axle

Fig. 6-4-1. Preparation for Adjustment

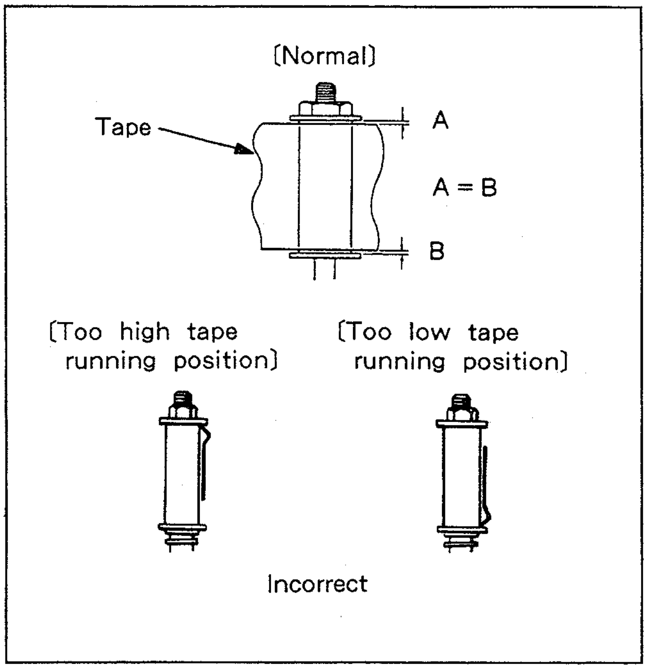
6-4-2. Adjustment by Visual Observation after Guide Roller, Fixed Guide or COMPL Head Bracket Replacement

Perform this adjustment after removing or replacing any of the above parts. Only for the replaced or removed parts, play back an alignment tape (VHJ-0009) beforehand and adjust height by visual observation.

(1) Exit Side Fixed Guide (See Fig. 6-4-2.)
Adjust so that the tape upper edge does not make contact with the fixed guide upper flange, and the tape lower edge does not make contact with the fixed guide lower flange. Gaps A and B should remain equal.

(2) Guide Rollers (See Fig. 6-4-3.)
The tape should not be curled by the guide roller upper and lower flanges. It should also run smoothly, without moving up and down on the DRUM (CYLINDER) lead surface.

Note : An excessive guide roller pressure may cause tape damage.


[Normal]
Tape
A
A = B
B
[Too high tape running position]
[Too low tape running position]
Incorrect

6-4-2. (1) Pre-set For Exit Side Fixed Guide

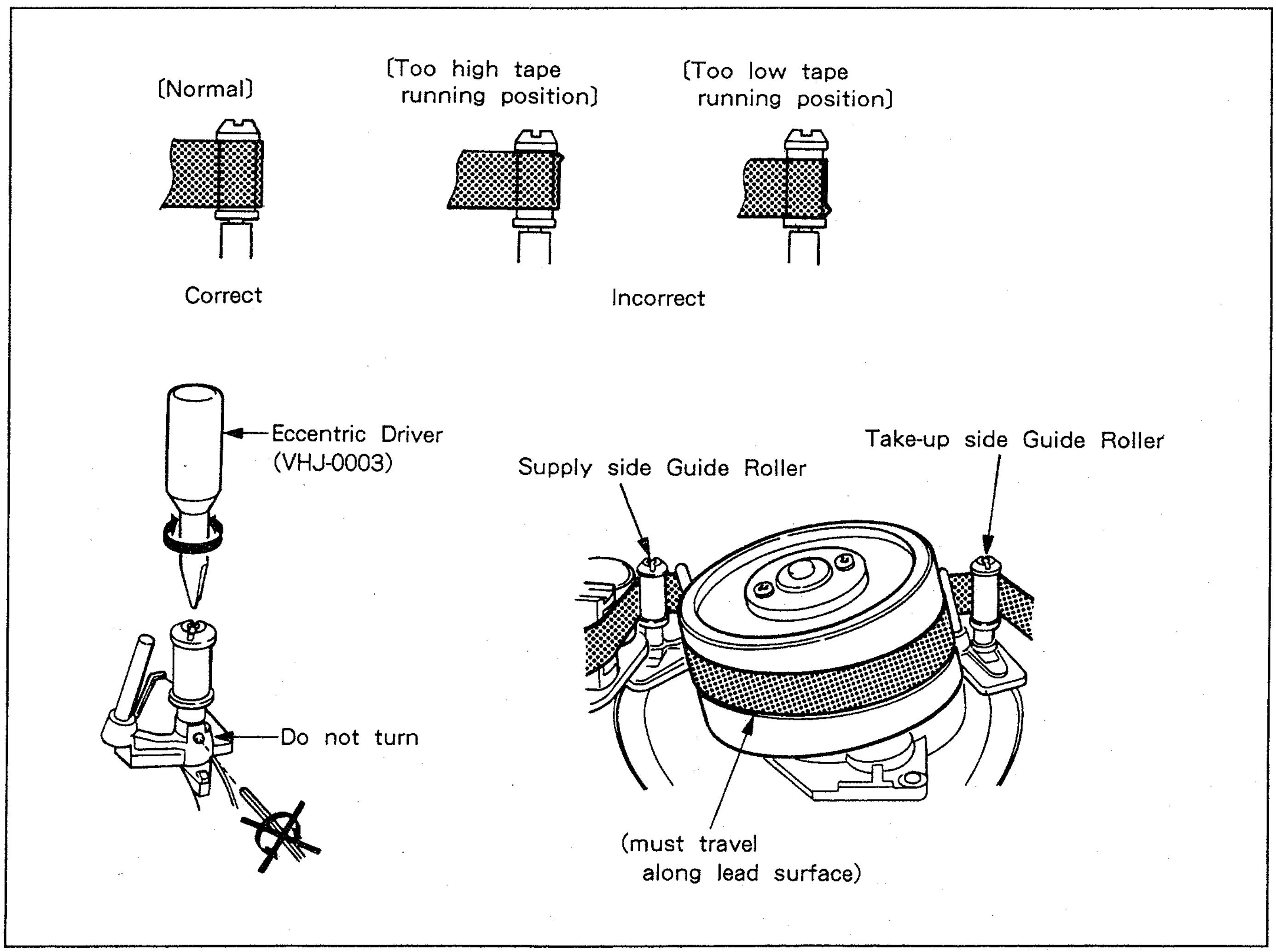

[Normal]
[Too high tape running position]
[Too low tape running position]
Correct
Incorrect
Eccentric Driver (VHJ-0003)
Do not turn
Supply side Guide Roller
Take-up side Guide Roller
(must travel along lead surface)

Fig. 6-4-3. (2) Pre-set for Guide Roller

(3) COMPL Head Bracket (ACE Head) (See Fig. 6-4-4.)
Adjust the special nut so that the tape edge runs between the audio head upper end and the control head lower end. Gaps A and B should be of about the same width. Since at this point it is only required that the control signal is picked up and the servo circuit works normally, no adjusting screws except the COMPL head bracket special nut should be touched.

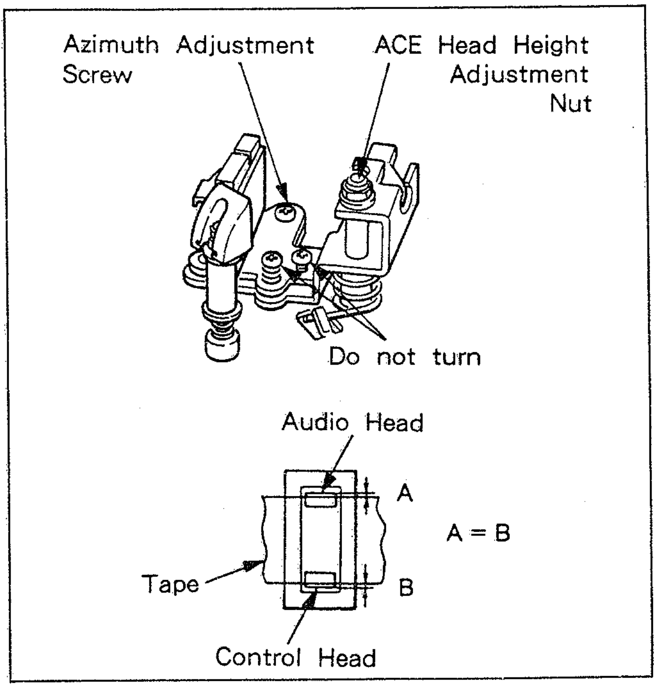

Azimuth Adjustment Screw
ACE Head Height Adjustment Nut
Do not turn
Audio Head
A
A = B
Tape
B
Control Head

Fig. 6-4-4. (3) Pre-set for Compl Head Bracket

6-4-3. Entrance Side Fixed Guide (S) Height Adjustment (See Fig. 6-4-5.)

The P90 mechanism entrance side fixed guide comes in two types ; the one in this unit is equipped with an upper flange and a spring coil, and it requires height adjustment. The other type is not provided with an upper flange and a spring coil. Height is naturally set when the special nut is fastened, so adjustment is not required.
For units with an upper flange, perform height adjustment as explained below. Even for types which do not require height adjustment, check whether the lower tape edge runs along the lower flange. Be careful not to fasten the special nut excessively, causing the axle to run idle.

1) Rotate the fixed guide (S) counterclockwise to lift the tape somewhat, then insert the fixed guide height gage (VHJ-0053) into the lower side of the fixed guide (S) lower flange.
2) Rotate the fixed guide (S) special nut clockwise a little at a time until the lower flange makes contact with the upper surface of the fixed guide height gage, causing a slight drag.
3) After rotating the special nut 90° counterclockwise, remove the Axed guide height gauge.
4) After adjusting the guide rollers in section 5-4-4, play back the alignment tape (VHJ-0009). Confirm that the tape lower edge runs in close contact with the fixed guide (S) lower flange. In case too much pressure has left a gap between the tape and the lower flange, or excessive lifting has caused curling of the tape lower edge, perform fine adjustment. However, do not adjust the special nut beyond 90° clockwise and 45° counterclockwise.

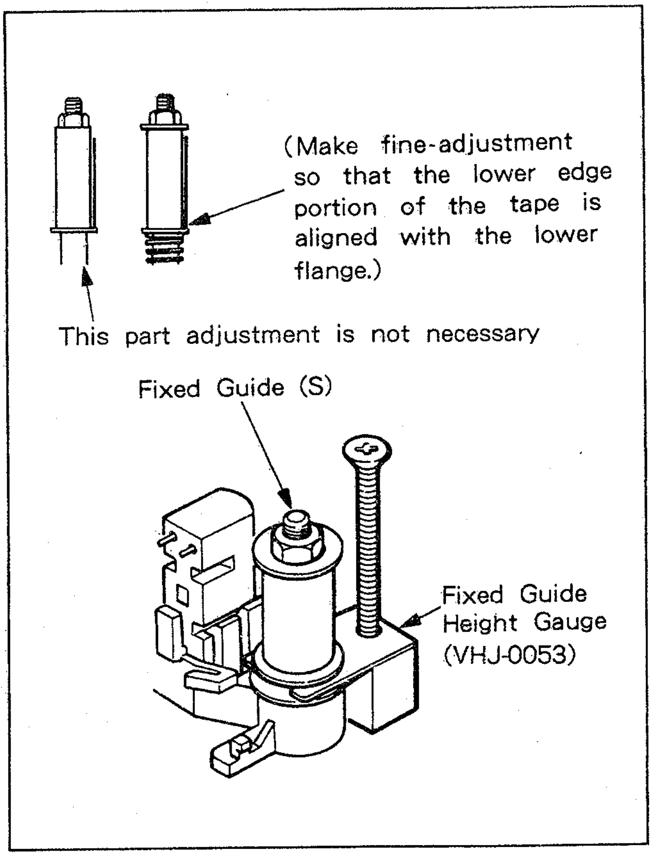

(Make fine-adjustment so that the lower edge portion of the tape is aligned with the lower flange.)
This part adjustment is not necessary
Fixed Guide (S)
Fixed Guide Height Gauge (VHJ-0053)

Fig. 6-4-5. Entrance Side Fixed Guides

6-4-4. Guide Roller Adjustment (See Fig. 6-4-6.)

1) Play back the alignment tape (VHJ-0009), press the tracking control key and adjust the envelope waveform to the maximum level.
2) Loosen the entrance and exit guide rollers by rotating them counterclockwise, then rotate them clockwise alternately until they are fastened and a flat video output waveform is obtained.
3) Confirm that the envelope waveform is not deformed, and check visually that no curling occurs at the guide roller upper and lower flanges.
4) Press the tracking control key and set the envelope waveform level to approx. 50% of the maximum. In this condition, confirm whether the envelope waveform is flat. It will not, showing valleys or peaks at the first half (entrance) or second half (exit), if the guide roller pressure is excessive or insufficient.
   In case there is unevenness in the first half (entrance), adjust the entrance side guide roller. If the second half (exit) shows trouble, adjust finely the exit side guide roller.

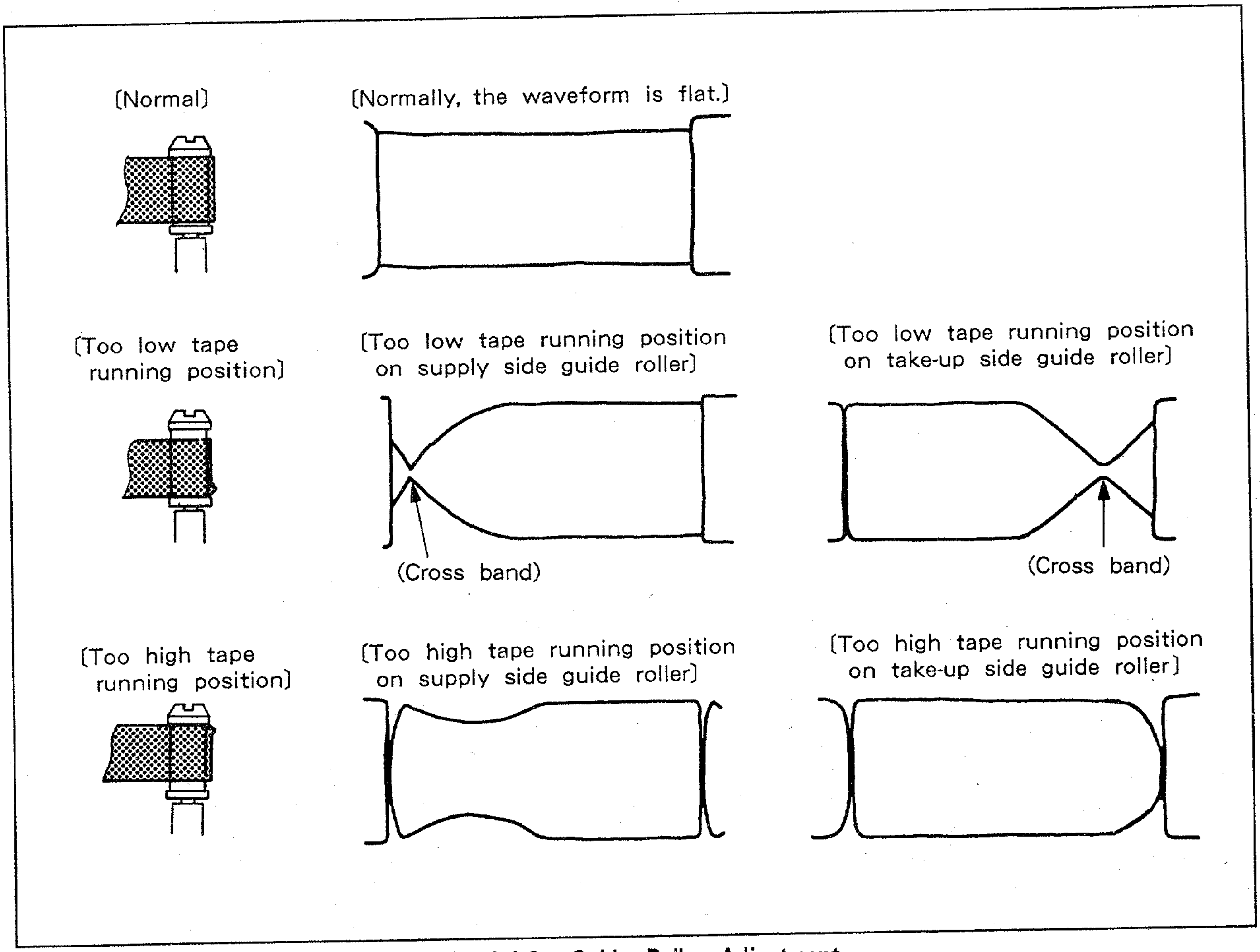

[Normal]
[Normally, the waveform is flat.]
[Too low tape running position]
[Too low tape running position on supply side guide roller]
(Cross band)
[Too low tape running position on take-up side guide roller]
(Cross band)
[Too high tape running position]
[Too high tape running position on supply side guide roller]
[Too high tape running position on take-up side guide roller]

Fig. 6-4-6. Guide Roller Adjustment

6-4-5. Exit Side Fixed Guide (T) Adjustment (See Fig. 6-4-7.)

1) Load the alignment tape (VHJ-0009) and set the PLAY mode.
2) Rotate the special nut counterclockwise so that the lower flange lifts the tape until its lower edge is slightly curled.
3) Rotate the special nut clockwise a little at a time until curling of the tape lower edge is removed.
4) Confirm at each mode (PLAY, F.SEARCH, R. SEARCH, F.F and REW) that the tape runs along the lower flange and that no curling occurs.

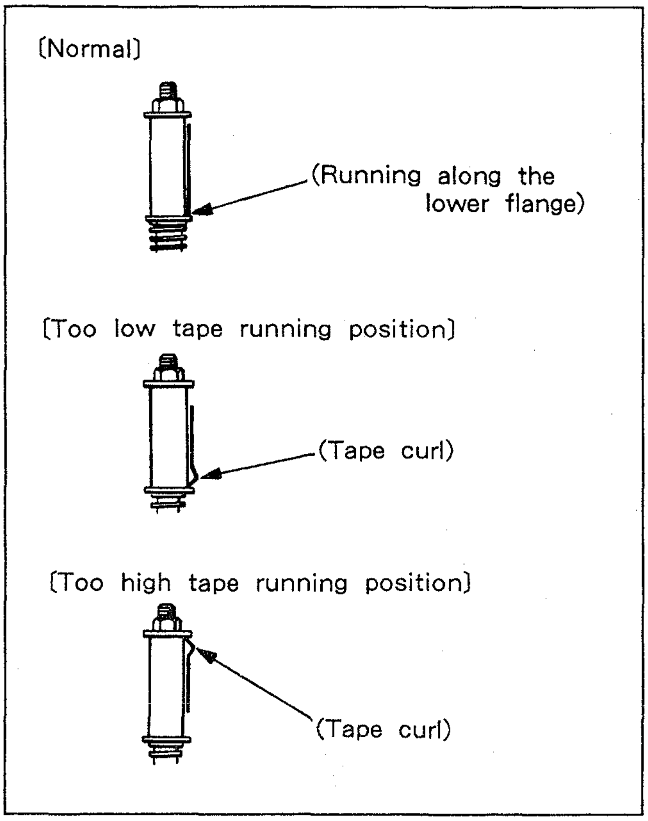

[Normal]
(Running along the lower flange)
[Too low tape running position]
(Tape curl)
[Too high tape running position]
(Tape curl)

Fig. 6-4-7. Fixed Guide (T)

6-4-6. COMPL Head Bracket (ACE Head) Adjustment

(1) Height Adjustment and Azimuth Adjustment (See Fig. 6-4-8.)

1) Load the alignment tape (VHJ-0009) and set the PLAY mode.
2) Monitor the audio output waveform with the oscilloscope.
3) Rotate the azimuth adjustment screw until the audio output waveform amplitude is maximum.
4) After loosening the ACE head height adjustment special nut, rotate it slowly clockwise until amplitude of the audio output waveform is maximum, then adjust it finely clockwise to the point just before the said waveform amplitude begins to decrease.
5) Rotate the azimuth adjustment screw until amplitude of the audio output waveform is maximum.
6) Confirm that the audio output waveform amplitude does not fluctuate.

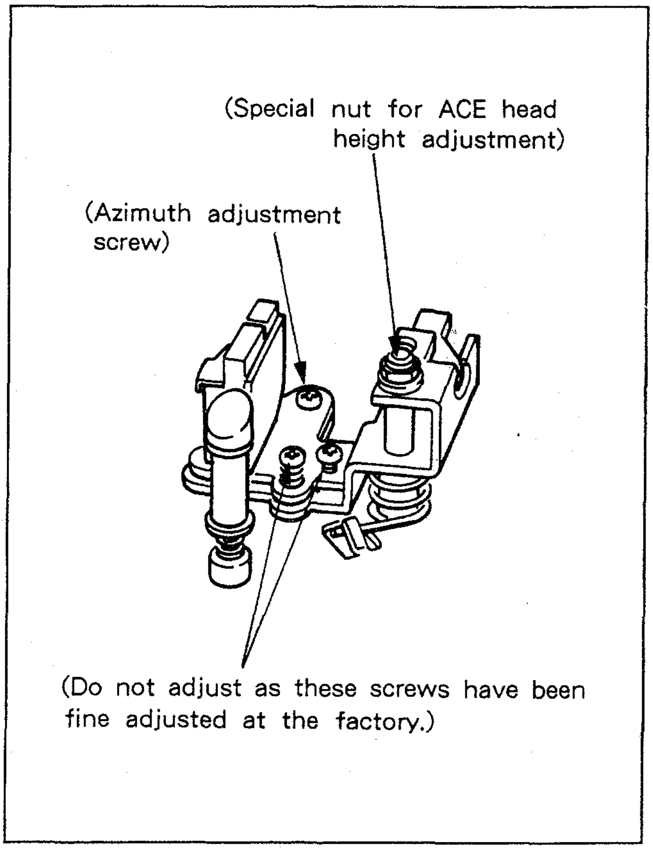

(Special nut for ACE head height adjustment)
(Azimuth adjustment screw)
(Do not adjust as these screws have been fine adjusted at the factory.)

Fig. 6-4-8. Compl Head Bracket

(2) Tracking (X Value) Adjustment (See Fig. 6-4-9.)

1) Load the alignment tape (VHJ-0009) and set the PLAY mode.
2) Set tracking to the center position with the tracking control key (See Note below).
3) Rotate the stopper bracket fixing screw 180° counterclockwise.
4) Monitor the video head output envelope waveform with the oscilloscope.
5) Adjust the stopper bracket position so that amplitude of the envelope waveform becomes maximum at the tracking center and the envelope waveform amplitude changes by the same amount when shifting the tracking center by pressing the plus (+) and minus (−) tracking control keys.
6) Tighten the fixing screw.
7) (Model for LP mode tape speed capability)
   Playback the alignment tape (VHJ-0052) and set the tracking to the center using a tracking control key.
   Then confirm that the playback picture on screen is normal. If not, Make readjustment by referring to items 1) through 7). To readjust, playback VHJ-0009 and finely adjust the position of the stopper bracket within the range in which the amplitude of the envelope waveform can be held to a maximum.
8) Perform servo circuit PB PHASE (Switching position) adjustment.

Note : For models equipped with auto tracking, always set to the manual tracking mode before adjustment. To confirm the tracking center position, press the tracking keys (+, −) and observe the front panel clock display. It will read "T − : −" at the tracking center, "T − : , T − − : " when keeping the minus (−) key pressed, and "T : −, T : − −" when keeping the plus (+) key pressed. The time indication will be restored 2 to 3 seconds after the tracking keys are released.

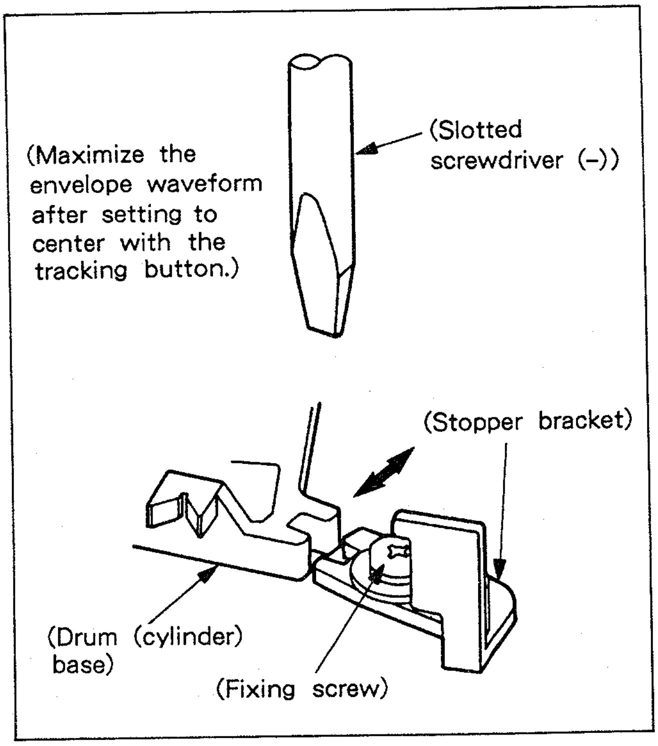

(Maximize the envelope waveform after setting to center with the tracking button.)
(Slotted screwdriver (-))
(Stopper bracket)
(Drum (cylinder) base)
(Fixing screw)

Fig. 6-4-9

6-4-7. Checking after Adjustment

Tape running may show a slight change depending upon the type of the cassette tape (thick or thin tape), the start, middle, or end of cassette tape winding, etc. After performing the tape path adjustment with use of an alignment tape, be sure to check the following points. Incidentally, the alignment tape to be used should be E-180 or E-240 cassette should be a good one without any damage to it.

(1) Try to play back the alignment tape (VHJ-0009) and confirm that the envelope waveform rise immediately and that there is no fluctuation in the envelope waveform and the audio output waveform.

(2) Load a cassette tape E-180 and start recording operation in the standard mode. 1 kHz should be fed to the audio input terminal when recording. After recording, the following points should be checked.

1. When the recorded portion is played back, the envelope waveform rise immediately, and no fluctuation in the envelope waveform is observed. Also, no speed drop occurs during the first half period or the last half period. Further, check to be sure that no fluctuation occurs in the audio waveform. Also confirm that neither the tape curling or derailing is caused on the upper or lower flange and the on the read side of the drum.
2. Confirm that no tape curling or derailing occurs in the upper or lower flange of each tape guide and the read side of the drum during each mode of operation, namely, FF, REW, F. SEARCH, and R. SEARCH.
3. Confirm that the envelope waveform rise immediately after changing the mode directly to the PLAY from each mode of FF, REW, F. SEARCH, R. SEARCH, or POWER OFF (INITIAL) and that no tape curling or derailing occurs in the upper or lower flange of the each tape guide and on the read side of the drum.

(3) Load a E-240 cassette tape and perform recording operation in the SP mode. 1 kHz should be fed to the audio input terminal when recording. Now, confirm that the envelope waveform rise immediately upon starting the playback of the recorded portion, and that neither fluctuation in the envelope waveform nor a speed drop occurs during the first half period or the last half period. Also confirm that no tape curling or derailing is caused in the upper or lower flange of each tape guide and on the drum lead surface.

(4) Perform recording for 60 seconds in the SP mode at the start of E-240 cassette winding. Play back the recorded portion and repeat the F.SEARCH ↔ R.SEARCH ten times, following which confirm that no damage is done to the tape edge. If any damage is found on the tape edge, a proper step must be taken as below depending upon the symptom obserbed.

1. When a sawtooth shaped damage is caused on underside of the tape edge by the REV guide
    1) Check to see if damage is done to the tape by the REV guide.
    2) Loosen the tilt adjustment screw of the ACE head bracket by turning it 135° counterclockwise.
    3) Make readjustment of the exit side fixing guide by referring to item 6-4-5.
    4) Make readjustment of the ACE head bracket (azimuth, height and adjustment of X value) by referring to item 6-4-6.
    5) Confirm that no fluctuation in the audio level is caused by loosening the tilt adjustment screw in steps 1) and 2) above. Move the screw a little back if any fluctuation is found (but never move it back to the original position). After adjusting the tilt adjustment screw is readjusted, perform steps 3) and 4) once again.
    6) Confirm again that the E-240 cassette tape does not sustain any damage.
    7) Perform the recording and playback on the E-180 and E-240 cassette tape and confirm that no fluctuation occurs in the envelope waveform and the audio waveform.

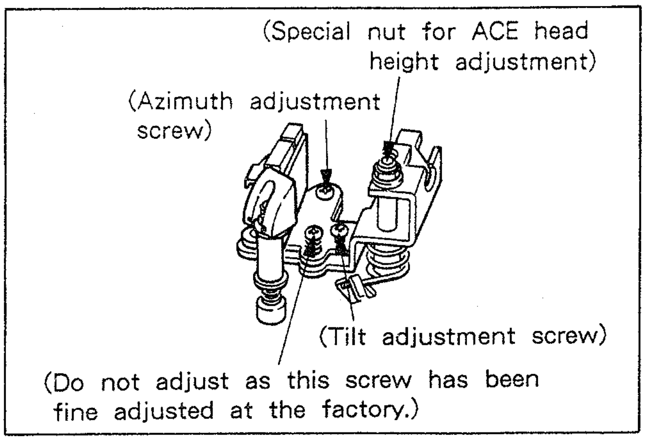

(Special nut for ACE head height adjustment)
(Azimuth adjustment screw)
(Tilt adjustment screw)
(Do not adjust as this screw has been fine adjusted at the factory.)

Fig. 6-4-10 Compl Head Bracket

2. If damage in the form of a sawtooth or a streak is found on the tape edge
   1) Check if a large amount of magnetic particles is adhered to the exit-side guide roller. If magnetic particles cannot be removed in spite of repeated cleaning, the guide roller must be replaced.
   2) Confirm if the tape is held too tightly by the exit-side guide roller, or if the last half of the envelope waveform is flat. If the type is found held too tightly, readjustment should be made by referring to 6-4-4.
   3) Recheck if the damage is still caused on the E-240 tape.
      If similar damage is still found on the tape, the exit-side guide roller should be loosened about 20° counterclockwise.
   4) Check once again that no fluctuation is caused in the envelope waveform or the audio waveform by loosening the exit-side guide roller. To do this, record and play back the E-240 cassette tape.

(5) Perform recording for 60 seconds in the SP mode at the near end of the E-240 cassette tape. Play back the recorded portion and repeat the F. SEARCH ↔ R. SEARCH ten times, following which a check should be made to see if damage is still done to the tape edge. If a damage in the form of a sawtooth or a streak is still occurred on the tape edge by the upper lounge of entrance side guide roller, proceed with the step given below.
   1) Check if a large amount of magnetic particles is adhered to the entrance-side guide roller. If the magnetic particles cannot be removed in spite of repeated cleaning, the guide roller must be replaced with new one.
   2) Confirm if the tape is held too tightly by the entrance-side guide roller, or if the first half of the envelope waveform is flat. If the tape is found held too tightly, readjustment should be made by referring to 6-4-4.
   3) Recheck if the damage is still caused on the E-240 tape.
      If the damage is still found on the tape, the entrance-sideguide roller should be loosened aboud 20° counterclockwise.
   4) Check once again that no fluctuation is caused in the envelop waveform or the audio waveform by looseving the entrance-side guide roller. To do this, record and play back the E-240 cassette tape.

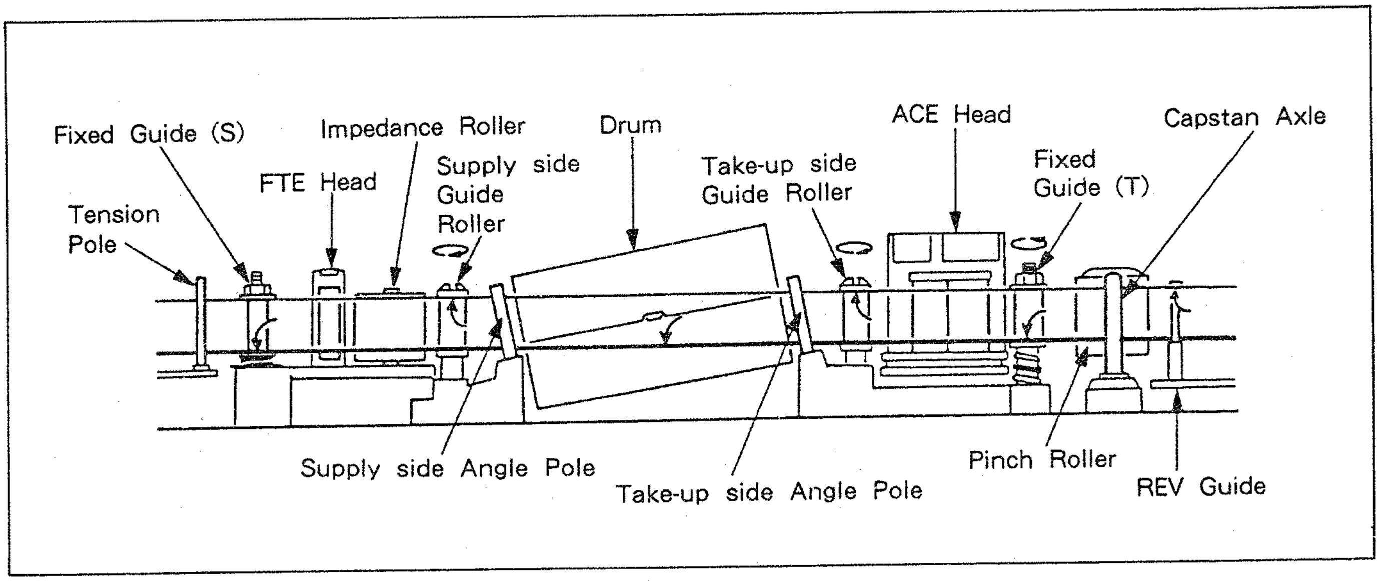


Fig. 6-4-11.

MEMO

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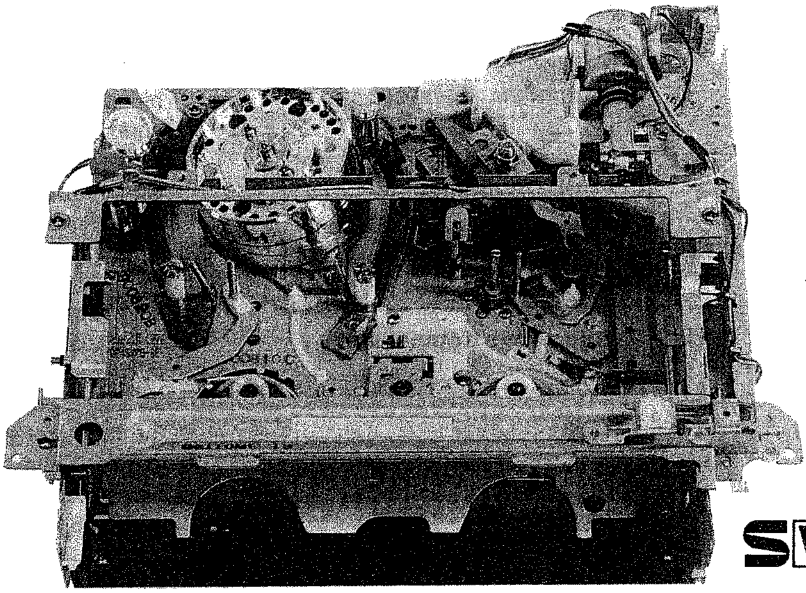
SUPPLEMENT SERVICE TECHNICAL INFORMATION

FISHER

P-90 S VHS MECHANISM

Video Cassette Recorder



S VHS 625 VHS PAL

Use this supplement together with the P-90 Mechanism Manual (WM-530598) of the Service Technical Information published in 1990.

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1 / WM530823 /
HL10F3-1 / SERVICE MANUAL / 0857364 SANYO FISHER

1. OUTLINE OF P-90 S VHS MECHANISM

The reel drive system of P-90 S VHS mechanism has been newly developed based upon the P-90 mechanism. As for the mechanism composition other than reel drive system is the same as P-90 mechanism. Since only the different sections from P-90 mechanism are described in this manual, use the P-90 Mechanism Manual (Mechanism Service Technical Information) published in 1990 as well.
P-90 S VHS is featured as follows;

1) Brass impedance rollers of large diameter at head drum entrance and small diameter at exit are employed in order to reduce jitter component of tape path system and to obtain the stable picture.

2) The mode transition time as shown in Fig. 1-1 is reduced, comparing with P-90 mechanism. The tape rewind time is largely reduced by FF/REW high-speed. Therefore, the following points are taken into consideration in P-90 S VHS.

	P-90 MECHANISM	P-90 S VHS MECHANISM
STOP → PLAY	1.5"	1.3"
CASSETTE IN	4.9"	4.4"
POWER OFF → PLAY	4.1"	3.6"
FF/REW REWIND TIME (E-180)	4'	2'40"

Table 1-1. Mode Transition Time Comparison

① Noise reduction by large driven gear
In order to reduce the noise of reel drive system in FF/REW modes, the large driven gear is employed so that proper contact ratio is obtained. A driving force between gears can be smoothly transmitted by using large gear, therefore the noise at gear engagement can be reduced.

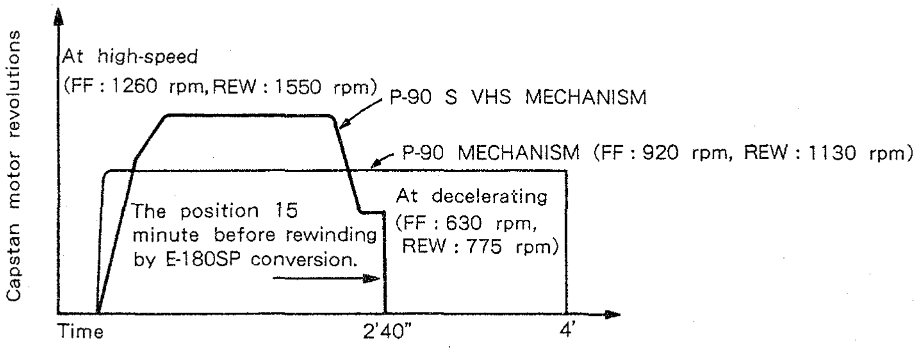
② Change of deceleration ratio in FF/REW modes
In order to reduce the capstan motor noise, the reel pulley diameter has been changed and drive deceleration ratio is reduced as possible.

③ Brake mechanism improvement
During taking-up the tape at high-speed in FF/REW modes, if sudden brake is applied, a high tape tension is generated and the tape will be damaged by rotary head, etc. Therefore, the brake mechanism components have been improved to apply brake softly, so that the brake operation is stabilized.

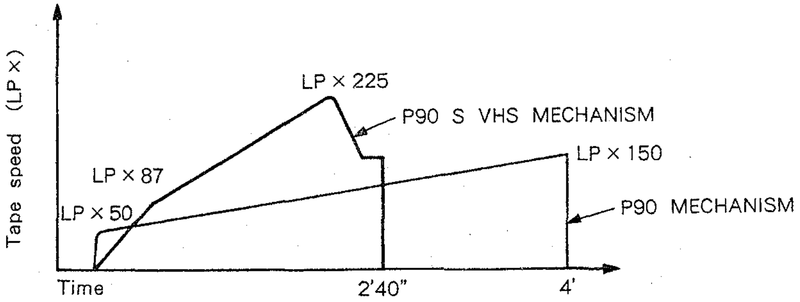
④ Capstan motor control
In order to operate FF and REW modes in higher-speed, a capstan motor used as a reel driving source is newly developed to upgrade the revolutions. However, only by upgrading the revolutions, VISS signal dropout, etc. caused by tape defects and slacks can not be prevented.
And when the tape is rewound in high-speed even at the end of tape rewinding, the leader tape portion is also rewound before the tape end sensor detects and the brake is applied, thus the tape will be damaged.
In order to prevent this, the capstan motor is designed to start smoothly at the start of FF/REW modes. And the tape remaining amount detector is used to detect the specified amount (E-60:2 mm, E-180:3.6 mm) at high-speed rewind, and as soon as it reaches the specified amount, the capstan motor deceleration starts. Also in decelerating mode, a smooth deceleration is performed not to cause any tape slacks. (Refer to 1-1.)

⑤ In order to prevent the noise caused by operating at high-speed in FF/REW modes, the guide roller at drum entrance is renewed .

3) A detection switch to enable automatic discrimination of S VHS cassette tape is added.
(Same type as conventional S VHS model)



Capstan motor control (E-180)



Tape speed (E-180)

Fig. 1-1. **Comparison of Conventional Mechanism and P-90 S VHS Mechanism**

2. SECTIONS CHANGED FROM P90 MECHANISM ISSUED IN 1990

2-2. DESCRIPTION OF MECHANISM DRIVE

The shaded sections are different from P-90 MECHANISM.

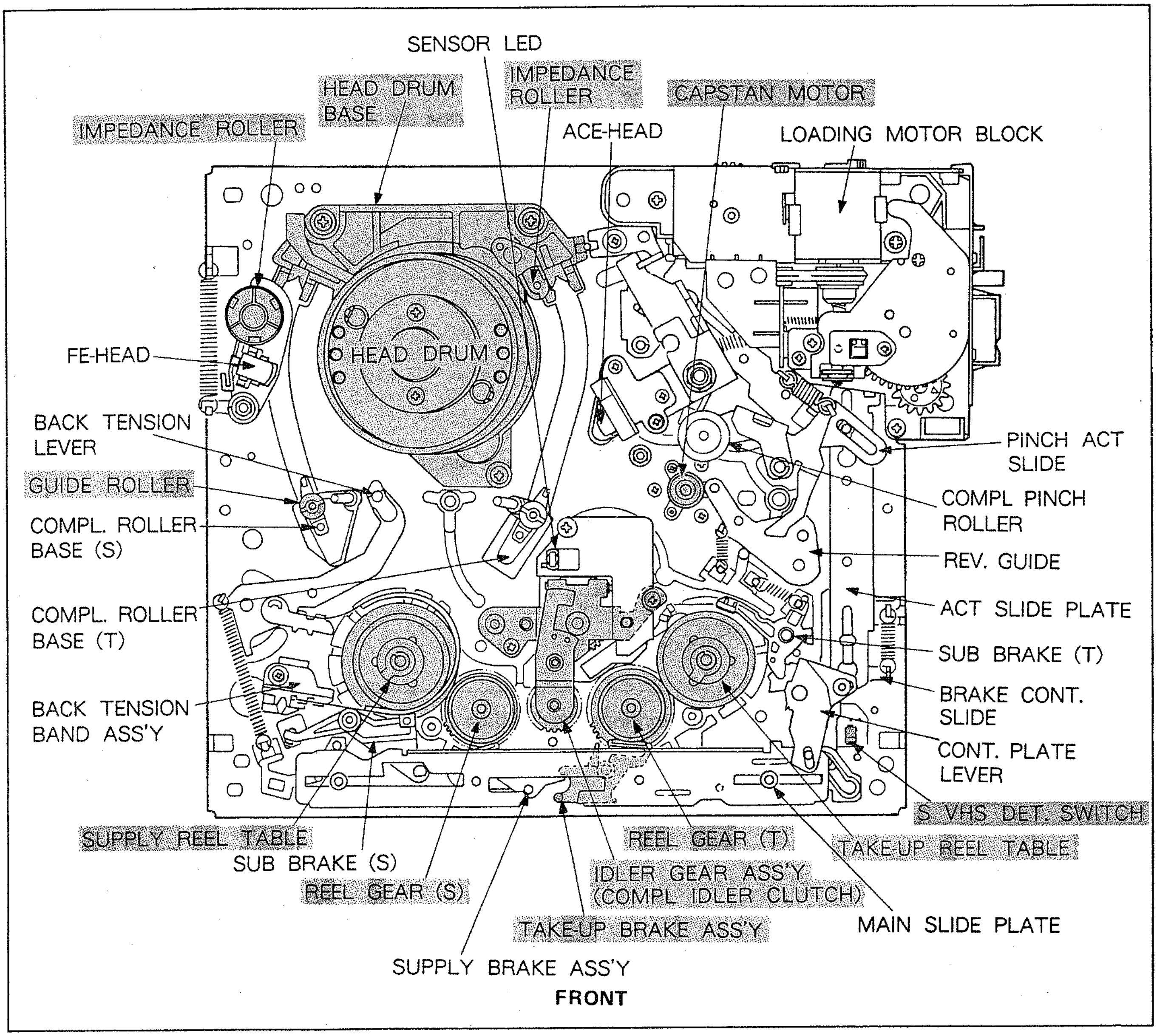

SENSOR LED
HEAD DRUM BASE
IMPEDANCE ROLLER
CAPSTAN MOTOR
IMPEDANCE ROLLER
ACE-HEAD
LOADING MOTOR BLOCK
FE-HEAD
HEAD DRUM
BACK TENSION LEVER
GUIDE ROLLER
COMPL. ROLLER BASE (S)
COMPL. ROLLER BASE (T)
BACK TENSION BAND ASS'Y
PINCH ACT SLIDE
COMPL PINCH ROLLER
REV. GUIDE
ACT SLIDE PLATE
SUB BRAKE (T)
BRAKE CONT. SLIDE
CONT. PLATE LEVER
S VHS DET. SWITCH
SUPPLY REEL TABLE
SUB BRAKE (S)
REEL GEAR (S)
REEL GEAR (T)
TAKE-UP REEL TABLE
IDLER GEAR ASS'Y (COMPL IDLER CLUTCH)
TAKE-UP BRAKE ASS'Y
MAIN SLIDE PLATE
SUPPLY BRAKE ASS'Y
FRONT

Fig. 2-1. TOP VIEW OF MECHANISM (INITIAL MODE)

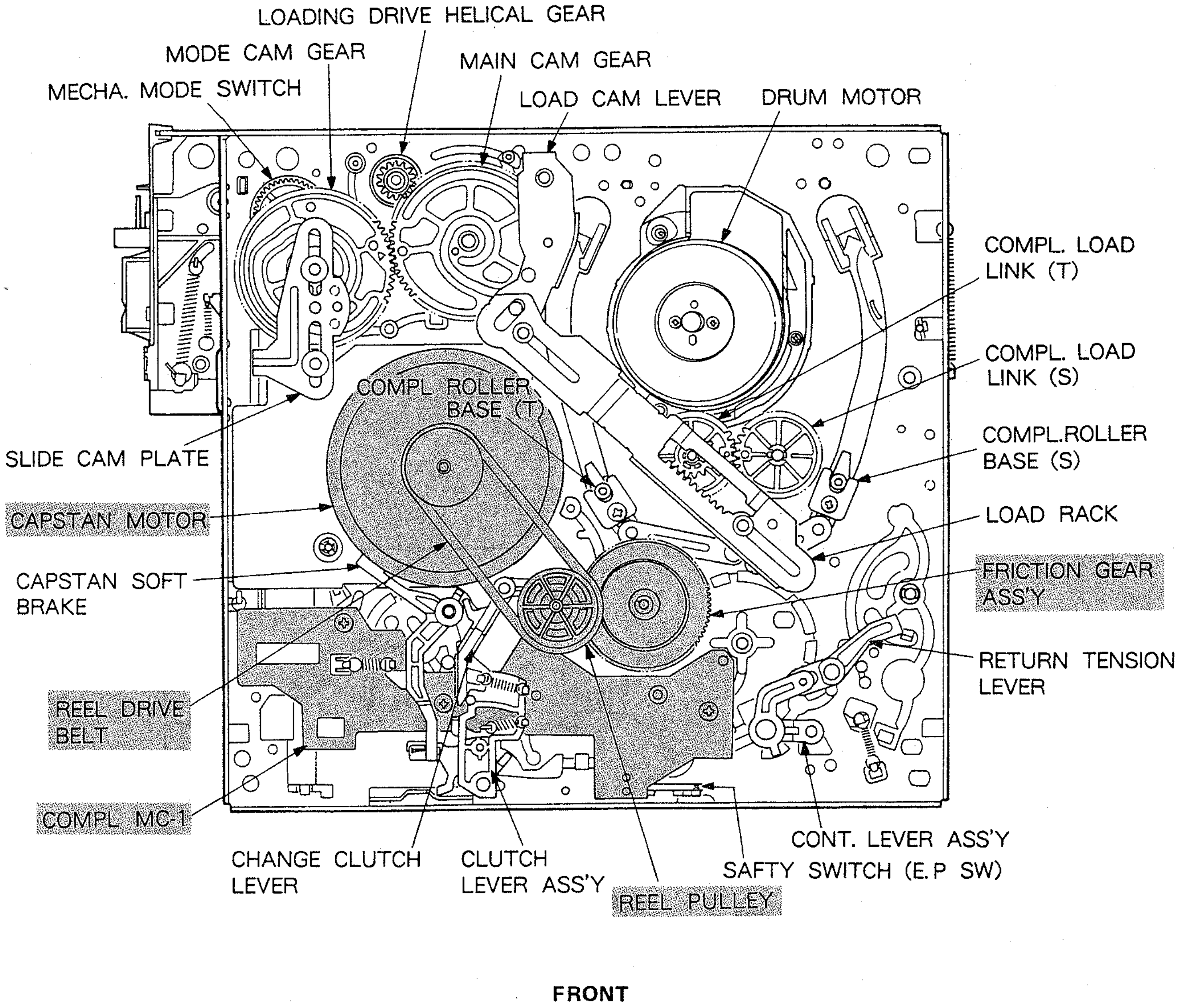

LOADING DRIVE HELICAL GEAR
MODE CAM GEAR
MAIN CAM GEAR
MECHA. MODE SWITCH
LOAD CAM LEVER
DRUM MOTOR
COMPL. LOAD LINK (T)
COMPL. LOAD LINK (S)
COMPL. ROLLER BASE (T)
COMPL.ROLLER BASE (S)
SLIDE CAM PLATE
CAPSTAN MOTOR
LOAD RACK
CAPSTAN SOFT BRAKE
FRICTION GEAR ASS'Y
RETURN TENSION LEVER
REEL DRIVE BELT
COMPL MC-1
CONT. LEVER ASS'Y
CHANGE CLUTCH LEVER
CLUTCH LEVER ASS'Y
SAFTY SWITCH (E.P SW)
REEL PULLEY
FRONT

Fig. 2-2. **BOTTOM VIEW OF MECHANISM (INITIAL MODE)**

5-1. MECHANISM MAIN UNIT (See Fig. 5-1-1.)

1. Removal

1) Remove the connectors of the COMPL MC-3 and the COMPL HEAD BRACKET.
2) Remove the flexible cable ① connecting the COMPL CYLINDER to the PRE-AMP UNIT ③ (See Fig. A).
3) Remove the two screws ②, then remove the PRE-AMP UNIT ③.
4) Remove the screw ④, then remove the PRE-AMP. BRACKET ⑤.
5) Remove the two screws ⑥.
6) Remove the screw ⑦, two screws ⑪ and two screws ⑩.
   Then lift up the mechanism main unit and remove it. Since the TRAY ⑧ obstructs removal of the two front screws ⑩, move the TRAY LOCK LEVER ⑨ in the direction of the arrow to unlock, then slide the TRAY ⑧ before removing the screws. (See Fig. B)

Note: Shape of the PRE-AMP UNIT ③ and the PRE-AMP. BRACKET ⑤ differ depending on the model.

2. Remounting

1) Mount the mechanism main unit onto the chassis with the screw ⑦, two screws ⑪ and two screws ⑩.
2) Tighten the two screws ⑥.
3) Mount the PRE-AMP. BRACKET ⑤ with the two screws ④.
4) Mount the PRE-AMP UNIT ③ and the ground lug with the two screws ② (some models are not provided with a ground lug).
5) Insert the flexible cable ① into the connector of the PRE-AMP UNIT.
6) Connect the connectors of COMPL MC-3 and COMPL HEAD BRACKET.

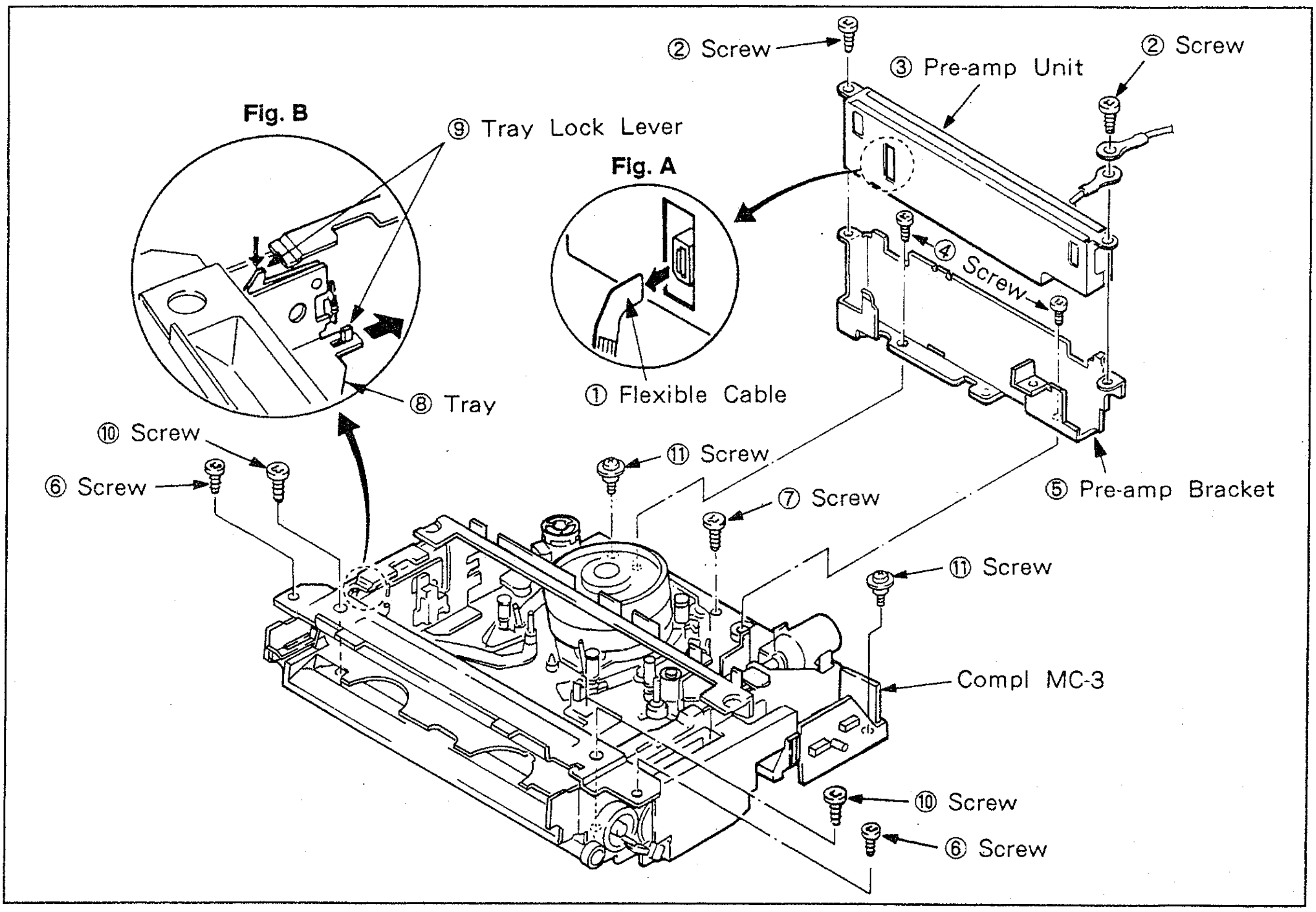

② Screw
③ Pre-amp Unit
② Screw
Fig. B
⑨ Tray Lock Lever
Fig. A
④ Screw
⑧ Tray
① Flexible Cable
⑩ Screw
⑥ Screw
⑪ Screw
⑦ Screw
⑤ Pre-amp Bracket
⑪ Screw
Compl MC-3
⑩ Screw
⑥ Screw

Fig. 5-1-1. Mechanism Main Unit

5-2. CASSETTE HOLDER MECHANISM

5-2-1. COMPL Cassette Mechanism (See Fig. 5-2-1.)

1. Removal

1) Set the video main unit to the EJECT completed mode.
2) Pull out the connectors (6-PIN CONNECTOR connected to the system control circuit board, ACE HEAD CONNECTOR, and FTE HEAD CONNECTOR) from CASSETTE HOLDER.
3) Remove the two screws ①.
4) Remove the two screws ②.
5) Lift up the COMPL CASSETTE MECHANISM ④ back a little and remove the two hooks ③ on the front (See Fig. B). When doing so, make sure that the SAFETY SWITCH LEVER is not caught by the mechanism chassis.

2. Remounting

1) Set the chassis section mechanism to the EJECT mode with the mode selector (VHJ-0050) (looking from above, match the front loading gear hole ⑤ with the MOTOR HOLDER hole ⑥ as shown in Fig. A).
2) Set the COMPL CASSETTE MECHANISM ④ to the EJECT completed mode.
3) Mount the COMPL CASSETTE MECHANISM ④ onto the mechanism chassis, aligning it with the protuberance.
   Match positions of the FRONT LOADING GEAR △ mark ⑦ and the RACK EJECT mark ⑧.
   (See Fig. A.)
4) Fix to the mechanism chassis with the two screws ②.
5) Fix to the chassis with the screw ①.
6) Connect to the various connectors.

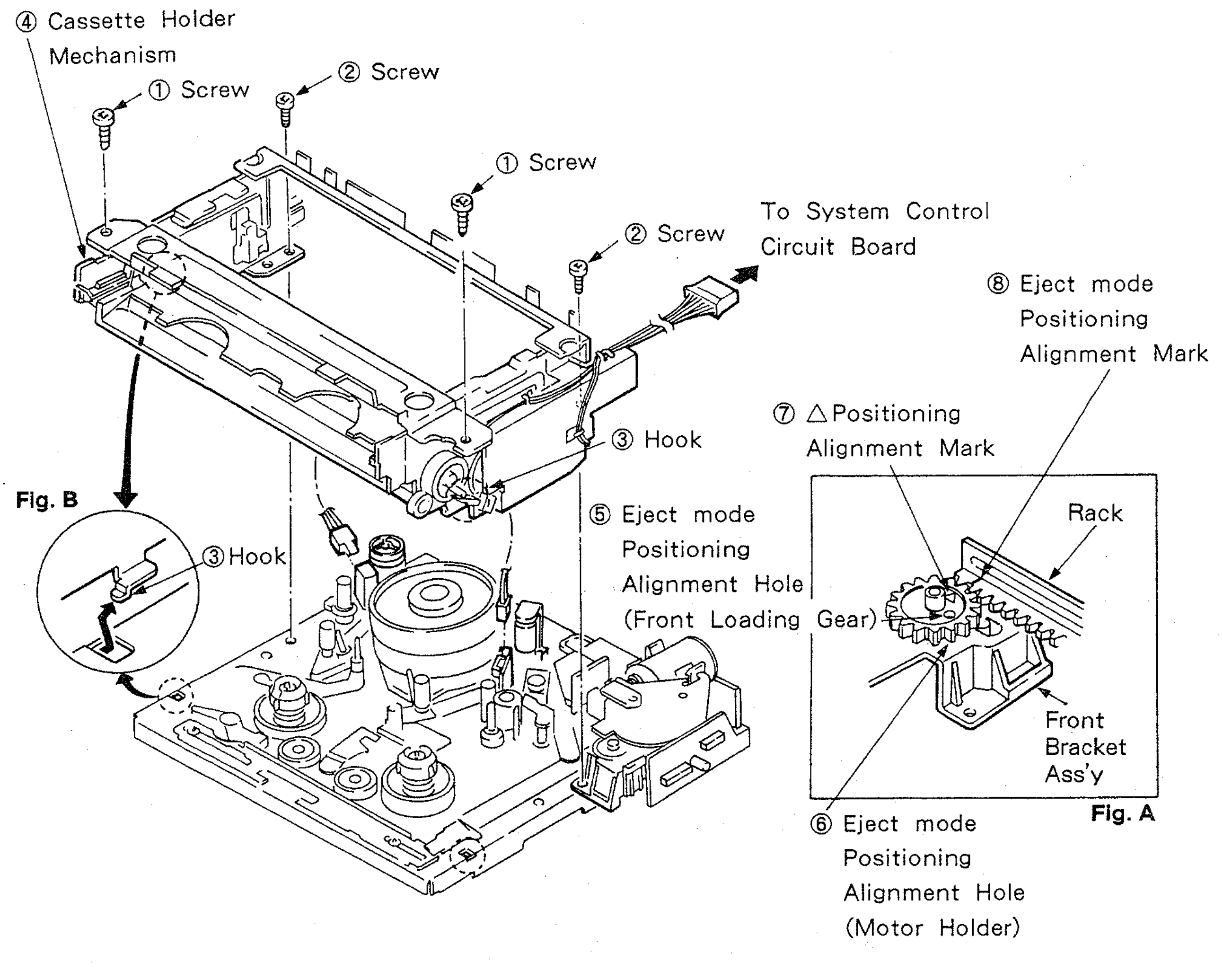

④ Cassette Holder Mechanism
① Screw
② Screw
① Screw
② Screw
To System Control Circuit Board
⑧ Eject mode Positioning Alignment Mark
⑦ △Positioning Alignment Mark
③ Hook
Fig. B
③Hook
⑤ Eject mode Positioning Alignment Hole (Front Loading Gear)
Rack
Front Bracket Ass'y
Fig. A
⑥ Eject mode Positioning Alignment Hole (Motor Holder)

Fig. 5-2-1. **Compl Cassette Mechanism**

5-2-3. Cassette Drive Gear (Right) (See Fig. 5-2-3.)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM and the GEAR BRACKET ASS'Y as instructed in 5-2-1. and 5-2-2., respectively.
2) Remove the IDLER GEAR ①.
3) Remove the SPRING COIL ②, then remove the MAIN GEAR ③.
4) Remove the E ring ④, then remove the LEVER GEAR ASS'Y R ⑤.
5) Open the hook ⑥ and remove the COUPLE GEAR R ⑦. Take care not to open the hook ⑥ too much, otherwise it may get deformed or broken. If it does, replace it.
6) Remove the IDLER GEAR R ⑧.

2. Remounting

1) Apply grease to gear parts that undergo friction.
2) Mount the IDLER GEAR R ⑧ onto the axle ⑨.
3) Mount the COUPLE GEAR R ⑦ onto the ROD ASS'Y axle ⑩. When doing so, match the couple gear position with the IDLER GEAR R ⑧ as shown in Fig. A.
4) Mount the LEVER GEAR ASS'Y R ⑤ onto the axles ⑪ and ⑫. Match position to the IDLER GEAR R ⑧ as shown in Fig. A.
5) Mount the E ring ④ onto the axle ⑫.
6) Mount the MAIN GEAR ③ onto the axle ⑪. When doing so, match position to the IDLER GEAR R ⑧ as shown in Fig. A.
7) Hook the SPRING COIL ② to the notch ⑬ in the MAIN GEAR R ③ and the LEVER GEAR ASS'Y R.
8) Mount the IDLER GEAR ① onto the axle ⑭. When doing so, match position to the MAIN GEAR as shown in Fig. A.
9) Mount the GEAR BRACKET ASS'Y and the COMPL CASSETTE MECHANISM ASS'Y as instructed in 5-2-2. and 5-2-1., respectively.

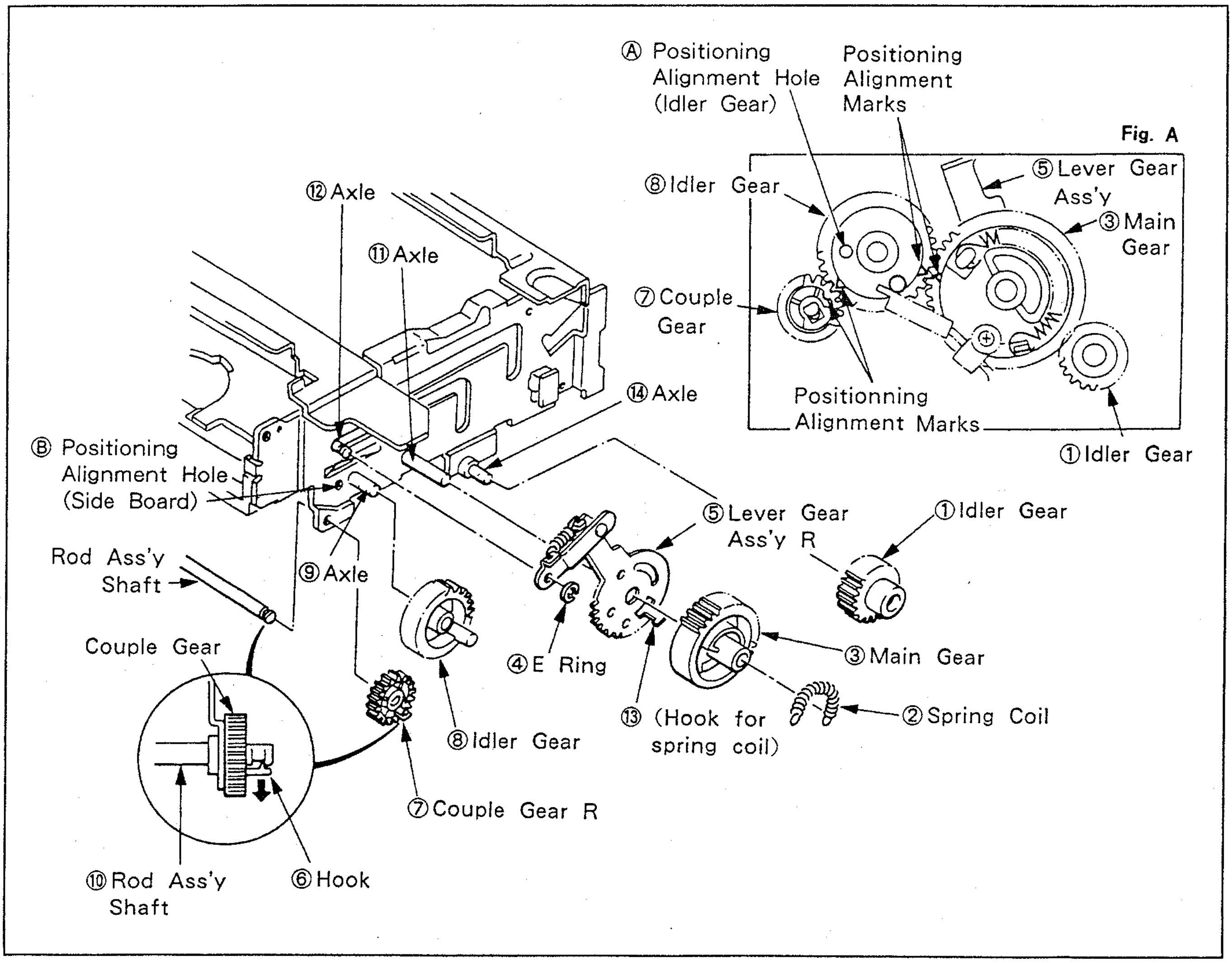

Ⓐ Positioning Alignment Hole (Idler Gear)
Positioning Alignment Marks
Fig. A
⑧Idler Gear
⑤Lever Gear Ass'y
③Main Gear
⑦Couple Gear
Positionning Alignment Marks
①Idler Gear
⑫Axle
⑪Axle
⑭Axle
Ⓑ Positioning Alignment Hole (Side Board)
Rod Ass'y Shaft
⑨Axle
Couple Gear
⑤Lever Gear Ass'y R
①Idler Gear
④E Ring
③Main Gear
⑬ (Hook for spring coil)
②Spring Coil
⑧Idler Gear
⑦Couple Gear R
⑩Rod Ass'y Shaft
⑥Hook

Fig. 5-2-3. Cassette Drive Gears (Right Side)

5-2-4. Cassette Drive Gear (Left) (See Fig. 5-2-4)

1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the COUPLE GEAR R as instructed in 5-2-3.
3) Remove the ROD ASS'Y ①.
4) Remove the E ring ②.
5) Remove the hook ③, then remove the LEVER GEAR ASS'Y L ④. Take care not to open the hook ③ too much, otherwise it may get deformed or broken. If it does, replace it.
6) Remove the SPRING COIL ⑤ from the LEVER GEAR ASS'Y ④.
7) Remove the IDLER GEAR L ⑥ and the DOOR OPEN LEVER ⑦.

2. Remounting

1) Apply grease to the axles ⑧, ⑨ and ⑩.
2) Apply grease to the IDLER GEAR L ⑥.
3) Mount the DOOR OPEN LEVER ⑦ onto the axle ⑧. Do it so that the end of the DOOR OPEN LEVER ⑦ leans against the front side of the CASSETTE DOOR ⑪ as shown in Fig. A.
   CASSETTE DOOR ⑪ is built in the front cabinet.
4) Mount the IDLER GEAR L ⑥ onto the axle ⑧.
5) Pass the ROD ASS'Y ① through the hole ⑫. Match position of the COUPLE GEAR L ⑬ and the IDLER GEAR L ⑥ as shown in Fig B.
6) Mount the COUPLE GEAR R as instructed in 5-2-3.
7) Hook the SPRING COIL ⑤ to the LEVER GEAR ASS'Y L ④.
8) Mount the LEVER GEAR ASS'Y L ④ onto the axle ⑨ and the shaft ⑩. Match position to the IDLER GEAR L ⑥ as shown in Fig. B.
9) Mount the COMPL CASSETTE MECHANISM onto the chassis as instructed in 5-2-1.

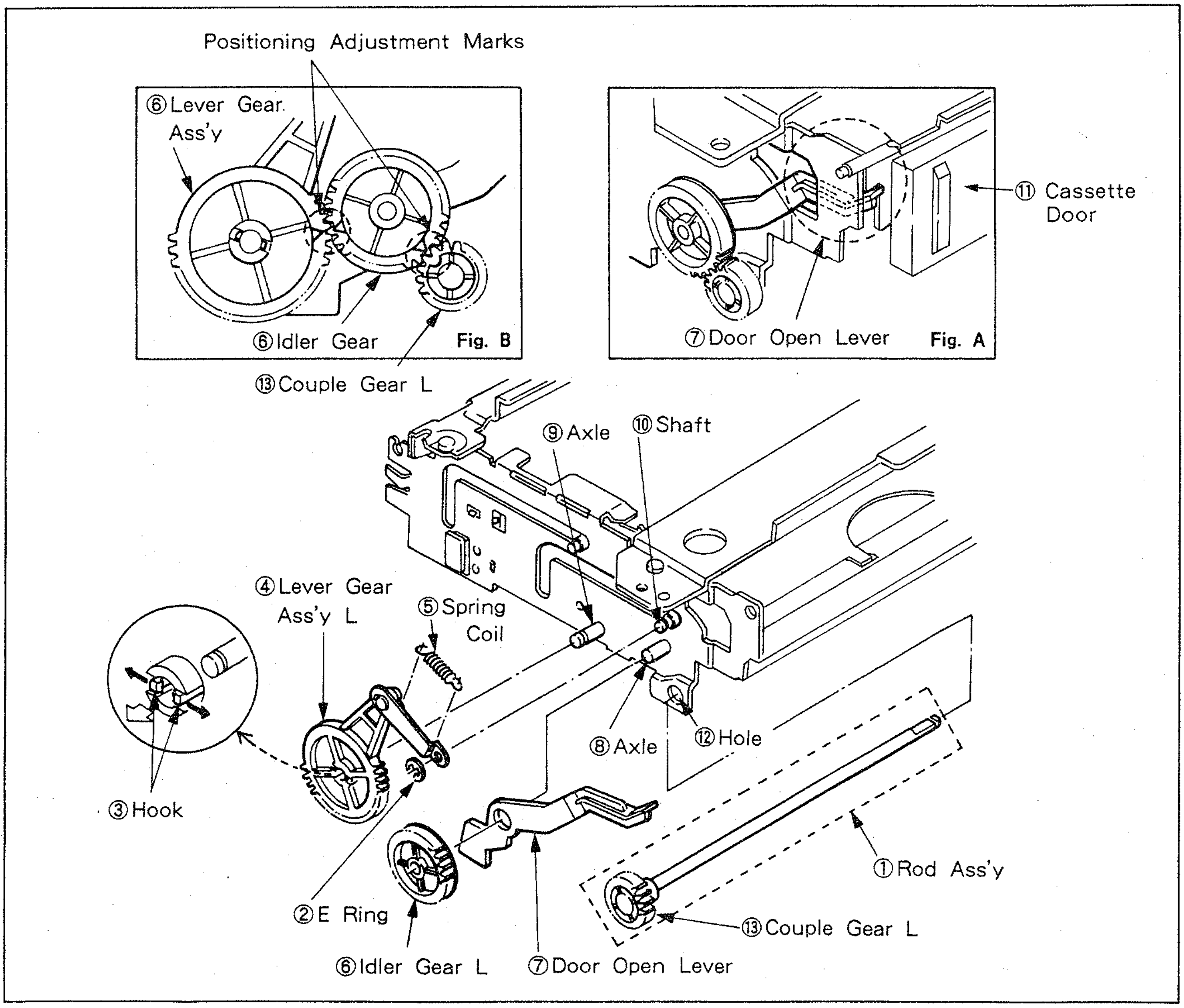

Positioning Adjustment Marks
⑥Lever Gear Ass'y
⑥Idler Gear
Fig. B
⑬Couple Gear L
⑪ Cassette Door
⑦Door Open Lever
Fig. A
⑨Axle
⑩Shaft
④Lever Gear Ass'y L
⑤Spring Coil
③Hook
⑧Axle
⑫Hole
①Rod Ass'y
②E Ring
⑬Couple Gear L
⑥Idler Gear L
⑦Door Open Lever

Fig. 5-2-4. Cassette Drive Gears (Left Side)

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Jan. / '91 / 1800 SU Printed in Japan